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YEAR-BOOK
OF
THE ROYAL SOCIETY.
1903.

LSoc 1816.16

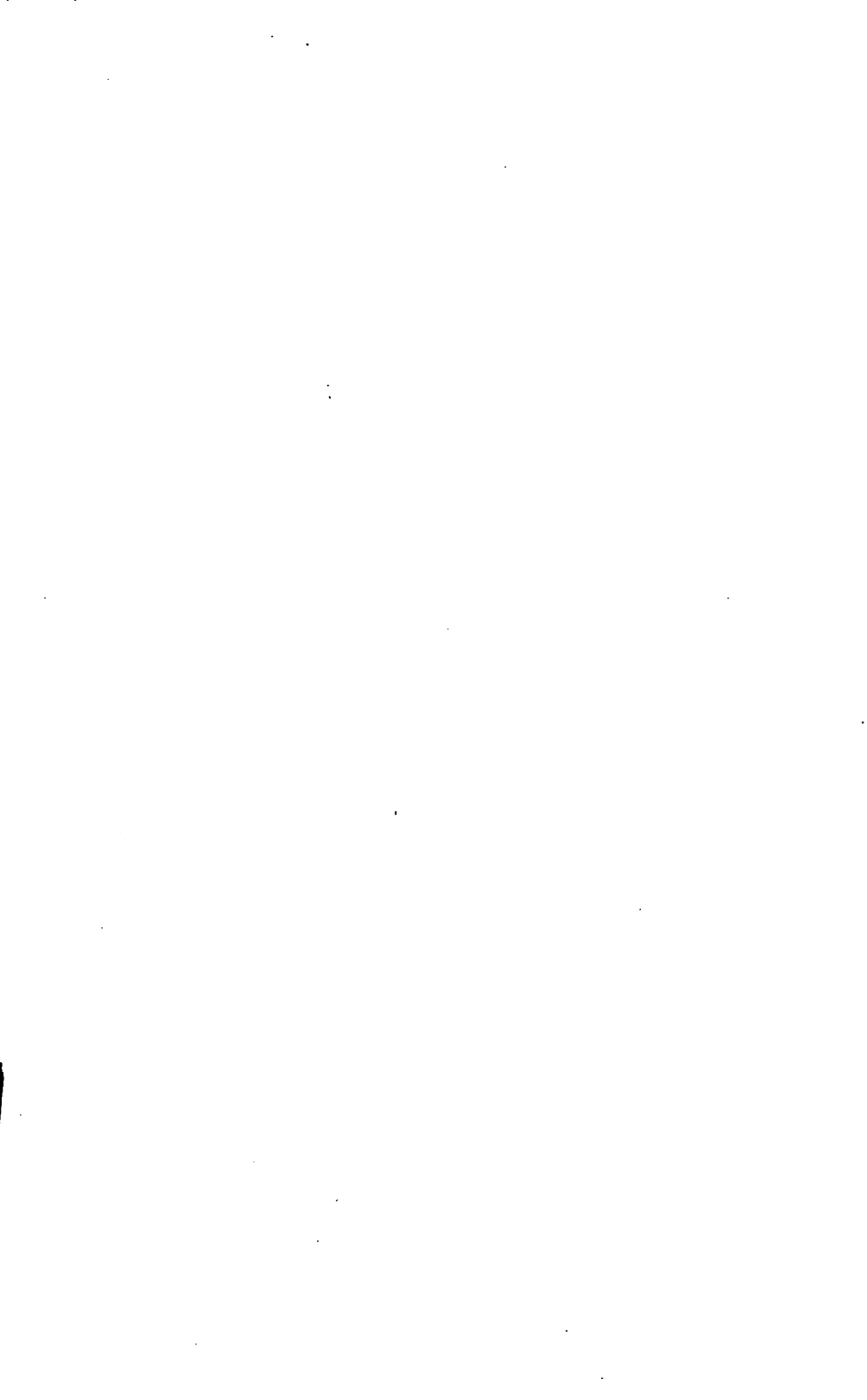


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Royal Society,
London, Eng.









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YEAR-BOOK

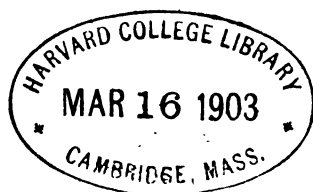
OF THE

ROYAL SOCIETY OF LONDON.

1903.

LONDON :
HARRISON AND SONS, ST. MARTIN'S LANE,
Printers in Ordinary to His Majesty.
1903.

L Soc 1816.16
(C. VII. 46)



The Society

HARRISON AND SONS,
PRINTERS IN ORDINARY TO HIS MAJESTY,
ST. MARTIN'S LANE.

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MEMORANDUM AS TO THE WISHES OF THE COUNCIL IN RESPECT OF BENEFACTIONS TO THE SOCIETY.

From time to time since its foundation, the Royal Society has, through the generosity of benefactors, received funds, now amounting to a very considerable sum.

In the majority of cases the terms of gift have limited the application of the money to certain definite purposes, and, in particular, to the award of medals or other prizes for scientific discoveries or other contributions to the advancement of Natural Knowledge.

Every year the Council have to award several medals, including the Copley, Royal, Rumford, Davy, Darwin, Buchanan, Sylvester, and Hughes Medals, or some of these, and have been led by experience to the conclusion that it is neither to the advantage of the Society nor in the interests of the advancement of Natural Knowledge that this already long list of medals should in future be added to, and that, therefore, no further bequests to be awarded as prizes for past achievements should be accepted by the Society.

They desire, however, to make known that the funds belonging absolutely to the Society, funds tied down by no special directions as to their applications, funds which the Society are free to use for general purposes, are very few indeed. And the President and Council have again and again had the experience that the usefulness of the Society for the advancement of Natural Knowledge has been greatly hampered by the lack of funds of which they could freely make use according to their own judgment.

The President and Council are confident that it would not be difficult, wherever desirable, to associate in some conspicuous manner with any gift to the Society the name of the benefactor, and indeed they would wish to do so.

The President and Council accordingly desire to make it generally known that while they will willingly receive gifts to be applied to special objects or for the benefit of particular sciences indicated by the donors, they consider that, in view of the varying necessities of Science, the most useful benefactions are those which are given to the Society in general terms for the advancement of Natural Knowledge.

YEAR-BOOK

OF

THE ROYAL SOCIETY.

1903.

FIXTURES OF THE SOCIETY.

1903.

JANUARY	22.	<i>Ordinary Meeting at 4.30 P.M.</i>		
"	29.	"	"	"
"	31.	<i>Last day for receiving applications for Government Grants.</i>		
FEBRUARY	5.	<i>Ordinary Meeting at 4.30 P.M.</i>		
"	12.	"	"	"
"	19.	"	"	"
"	26.	"	"	"
MARCH	5.	<i>Last day for receiving certificates of Candidates for election.</i>		
"	5.	<i>Ordinary Meeting at 4.30 P.M.</i>		
"	12.	"	"	"
"	19.	"	"	"
"	26.	"	"	"
APRIL	30.	"	"	"
MAY	7.	"	"	"
"	14.	"	"	"
"	28.	"	"	"
JUNE	11.	<i>Election of Fellows at 4 P.M.</i>		
"	11.	<i>Ordinary Meeting at 4.30 P.M.</i>		
"	18.	"	"	"
NOVEMBER	19.	"	"	"
"	26.	"	"	"
"	30.	<i>Anniversary Meeting at 4 P.M. (Monday).</i>		
DECEMBER	3.	<i>Ordinary Meeting at 4.30 P.M.</i>		
"	10.	"	"	"

THE LIST OF THE ROYAL SOCIETY, JAN. 1, 1903.

HIS SACRED MAJESTY KING EDWARD VII., PATRON.

HIS ROYAL HIGHNESS THE PRINCE OF WALES, K.G.

THE COUNCIL.

SIR WILLIAM HUGGINS, K.C.B., O.M., D.C.L., LL.D.—PRESIDENT.

ALFRED BRAY KEMPE, M.A.—TREASURER AND VICE-PRESIDENT.

SIR MICHAEL FOSTER, K.C.B., D.C.L., LL.D.—SECRETARY.

DR. JOSEPH LARMOR, M.A., D.Sc., LL.D.—SECRETARY.

DR. THOMAS EDWARD THORPE, C.B., Sc.D.—FOREIGN SECRETARY.

WILLIAM BATESON, M.A.

WILLIAM THOMAS BLANFORD,
LL.D.—VICE-PRESIDENT.

PROF. HUGH LONGBOURNE
CALLENDAR, LL.D.

FRANCIS DARWIN, M.A.

PROF. HAROLD BAILY DIXON,
M.A.

PROF. GEORGE CAREY FOSTER,
LL.D.—VICE-PRESIDENT.

RIGHT HON. SIR JOHN E. GORST,
M.A.

PROF. JOHN WESLEY JUDD,
C.B., LL.D.—VICE-PRESIDENT.

RIGHT HON. THE LORD LISTER,
O.M., F.R.C.S.

PROF. GEORGE DOWNING
LIVEING, M.A.

PROF. AUGUSTUS EDWARD
HOUGH LOVE, M.A.

PROF. HENRY ALEXANDER
MIERS, M.A.

PROF. EDWARD ALBERT
SCHÄFER, LL.D.

CAPT. THOMAS HENRY TIZARD,
R.N., C.B.

PROF. HERBERT HALL TURNER,
M.A.

SIR JOHN WOLFE-BARRY, K.C.B., LL.D.

This Council will continue till December 1, 1903.

R. HARRISON—ASST. SECRETARY
AND LIBRARIAN.

Clerk.

THEODORE E. JAMES.

Assistant Librarian.

A. HASTINGS WHITE.

Papers Clerk.

FRANK B. BULL.

Junior Clerk.

ROBERT L. SHEPPARD.

Committee Clerk and Clerk to the Government Grant Committee.

F. A. TOWLE.

FELLOWS OF THE ROYAL SOCIETY, JANUARY 1, 1903.

Date of
ElectionService on
Council, &c.

- 1876 Abney, Sir William de Wiveleslie, K.C.B. D.C.L. (Dunelm.) D.Sc. 1883-85
(Vict. and Dub.) F.I.C. F.C.S. F.R.A.S., Principal Assistant Secretary, Board of Education, South Kensington, retired Capt. R.E. 91-93
Medal: Rumford. Measham Hall, Leicestershire; Rathmore Lodge, Bolton Gardens South, Earl's Court, S.W.; and Athenæum Club, S.W.
- 1872 Adams, William Grylls, M.A. D.Sc. F.G.S. F.C.P.S. Vice-President 1882-84
of Physical Soc.; Past Pres. Inst. Elec. Eng.; Professor of Natural 96-98
Philosophy and Astronomy in King's College, London. 43 *Campden Hill Square, W.*
- 1889 Aitken, John, F.R.S.E. *Ardenlea, Falkirk, N.B.*
- 1901 Alcock, Alfred William, Major I.M.S. C.I.E. M.B. LL.D. C.M.Z.S.
Superintendent of the Indian Museum, and Professor of Zoology
in the Medical College, Calcutta. *Indian Museum, Calcutta.*
- 1880 Allbutt, Thomas Clifford, M.A. M.D. LL.D. D.Sc. F.L.S. Regius Pro- 1896-98
fessor of Physic in the University of Cambridge. *St. Radegund's, Cambridge.*
- 1891 Allerton, Right Hon. William Lawies Jackson, Lord. 27 *Cadogan Square, S.W.; and Allerton Hall, Chapel Allerton, Leeds.*
- 1884 Allman, George Johnston, LL.D. D.Sc., late Professor of Mathematics
in Queen's College, Galway; Member of Senate of the Royal
University of Ireland. *St. Mary's, Galway.*
- 1902 Alverstone, Richard Everard Webster, Lord, G.C.M.G. *Hornton Lodge, Kensington, W.*
- 1898 Andrews, Thomas, F.R.S.E. F.C.S. Mem. Inst. C.E., Telford Medallist
and Prizeman, Inst. C.E., Bessemer Prizeman, Soc. Engineers.
Ravencrag, Wortley, near Sheffield.
- 1876 Armstrong, Henry Edward. Ph.D. (Lips.) LL.D. (St. Andr.) Past 1888-90
Pres. Chem. Soc.; Professor of Chemistry at the City and Guilds 1900-2
of London Central Technical College, South Kensington; Hon. V.P.
Mem. Pharm. Soc. Lond. 55 *Granville Park, Lewisham, S.E.;* 1901-2
and Athenæum Club, S.W.
- 1880 Attfield, John, M.A. Ph.D. (Tüb.) F.I.C. F.C.S., late Professor of
Practical Chemistry to the Pharmaceutical Society of Great
Britain, Hon. Mem. Amer. Pharm. Assoc., Colls. Pharm. Philad.,
New York, Mass., Chic., Ontario, and Pharm. Assocs. Liverp.,
Manch., Maryland, Virg., Georgia, New Hampshire, and Quebec;
Hon. Corresp. Mem. Soc. Pharm. Paris; Hon. Mem. Pharm. Soc.
Gr. Brit., New South Wales, St. Petersburg, Austria, Denmark, East
Flanders, Switzerland, Queensland, and Australasia. *Ashlands, Watford, Herts.*

Date of
ElectionService on
Council, &c.

- 1858 Avebury, Right Hon. John Lubbock, Lord, D.C.L. (Oxon.) LL.D. 1861-63
(Cantab., Dubl. et Edin.) M.D. (Würzb.) V.P.L.S. F.G.S. F.Z.S.
F.S.A. F.E.S. Trust. Brit. Mus.; Pruss. Ord. "*Pour la Mérite*";
Assoc. Acad. Roy. des Sci. Brux.; Hon. Mem. R. Irish Acad.,
N.Z. Inst., Amer. Ethnol. Soc., Anthropol. Soc. Wash. (U.S.),
Brux., Firenze, Anthropol. Verein Graz., Soc. Entom. de France,
Allgem. Entomol., Gesell., Soc. Géol. de la Suisse, and Soc.
Helvét. des Sci. Nat.; Mem. Amer. Phil. Soc. Philad., K. Vetensk.
Soc. Upsala, Westfälischen Prov. Vereins für Wiss. u. Kunst, and
Soc. d'Ethn. de Paris; Corresp. Mem. Soc. Nat. des Sci. Nat. de
Cherb., Berl. Gesell. für Anthropol., Soc. Romana. di Antrop., Soc.
d'Emul. d'Abbeville, Soc. Cient. Argentina, Soc. de Géog. de Lisb.,
Acad. Nat. Sci. Philad., Numis. and Ant. Soc. Philad., Amer.
Entom. Soc., Soc. Españ. de Hist. Nat.; For. Assoc. Mem. Soc.
d'Anthropol. de Paris; For. Mem. Amer. Antiq. Soc., K. Svenska
Vetensk.-Akad. *High Elms, Down, Kent.*
- 1881 Ayrton, William Edward, Past Pres. Phys. Soc. and Inst. Elect. Eng.; 1889-91
Professor of Electrical Engineering in the Central Technical
College of the City and Guilds of London Institute. **Medal:**
Royal. *City and Guilds of London Institute, Exhibition Road,*
S.W.
- 1885 Baird, Andrew Wilson, C.S.I. Colonel R.E. *Palmers' Cross, Elgin,*
N.B.; and East India United Service Club, S.W.
- 1890 Baker, Sir Benjamin, K.C.B. K.C.M.G. LL.D. M.E. (Dubl.) Mem. 1892-93
Inst. C.E.; Hon. Mem. Amer. Soc. Mechan. Engs., Soc. of Engs.,
and Lit. and Phil. Soc. Manchester. 2 *Queen Square Place, Queen*
Anne's Mansions, Westminster; and Athenæum Club, S.W.
- 1898 Baker, Henry Frederick, Sc.D. Fellow and Lecturer of St. John's
College, Cambridge, and University Lecturer in Mathematics;
Pres. Camb. Phil. Soc. 4 *Belvoir Terrace, Trumpington Road,*
Cambridge.
- 1902 Baker, Herbert Brereton, M.A. 2 *College Gardens, Dulwich, S.E.*
- 1878 Baker, John Gilbert, F.L.S. late Keeper of the Herbarium, Royal 1883-84
Gardens, Kew. 3 *Cumberland Road, Kew.*
- 1888 Balfour, Right Hon. Arthur James, D.C.L. 10 *Downing Street, S.W.;*
and Whittingehame, Prestonkirk, N.B.
- 1884 Balfour, Isaac Bayley, D.Sc. M.D. (Edin.) M.A. (Oxon.) F.R.S.E. 1892-94
F.L.S. F.G.S. Keeper of the Royal Botanic Garden, Edinburgh,
Queen's Botanist in Scotland, and Professor of Botany in the
University of Edinburgh; Corresp. Mem. Deutsch. Bot. Gesell.,
Soc. Nat. des Sci. Nat. et Math. Cherbourg, New York Acad. Sci.
Inverleith House, Edinburgh; and Athenæum Club, S.W.
- 1873 Ball, Sir Robert Stawell, Kt., Hon. M.A. (Cantab.) LL.D. F.R.A.S. 1897-98
M.R.I.A. Hon. Mem. Phil. Soc. Camb. and Roy. Soc. Edin.
Lowndean Professor of Astronomy and Geometry in the University

Fellows of the Royal Society.

5

Date of
Election

Service on
Council, &c.

of Cambridge. *The Observatory, Cambridge; and Athenæum Club, S.W.*

- | | | |
|------|--|--|
| 1899 | Barrett, William F., F.R.S.E. M.B.I.A. Professor of Experimental Physics in the Royal College of Science for Ireland. 6 <i>De Vesce Terrace, Kingstown, Co. Dublin.</i> | |
| | Barry (<i>see Wolfe Barry</i>). | |
| 1889 | Basset, Alfred Barnard, M.A. <i>Fledborough Hall, Holypot, Berks.</i> | |
| 1868 | Bastian, Henry Charlton, M.A. M.D. F.L.S. Coll. Reg. Med. Soc. Emeritus Professor of the Principles and Practice of Medicine, University College; Consulting Physician to University College Hospital; Fellow of Univ. Coll. London; Hon. M.D. Royal University, and Hon. Fellow Roy. Coll. Phys., Ireland; Corr. Mem. Roy. Acad. Med. Turin, Med. Chir. Soc. Bologna, and Soc. Psychol. Physiolog. Paris. 8A <i>Manchester Square, W.</i> | |
| 1894 | Bateson, William, M.A., Fellow of St. John's College, Cambridge. | 1901- |
| | <i>Merton House, Grantchester, Cambridge.</i> | |
| 1857 | Beale, Lionel Smith, M.B. Coll. Reg. Med. Soc. Emeritus Prof. of the Principles and Practice of Medicine, late Prof. of Physiology and of General and Morbid Anatomy in King's College, London, and Physician to the Hospital; Government Medical Referee for England. 61 <i>Grosvenor Street, W.</i> | 1865-67 |
| 1892 | Beddard, Frank Evers, M.A. (Oxon.) F.R.S.E. F.Z.S. F.E.S. Vice-Secretary and Prosector of the Zoological Society. <i>Zoological Society's Gardens, Regent's Park, N.W.</i> | |
| 1873 | Beddoe, John, M.D. F.R.C.P. LL.D. (Edin.) B.A., Officier (1 ^{re} classe) de l'Instr. Publ. France; Vice-Pres. Anthropol. Inst.; Corresp. Mem. Anthropol. Soc. Berlin; and Soc. Romana di Antrop.; For. Assoc. Mem. Soc. Anthropol. Paris; Hon. Mem. Nat. Hist. Soc. Bristol, Roy. Inst. Cornwall, Philos. Inst. Bath, Anthropol. Soc. Brussels and Washington, Acad. Anthropol. New York, Amer. Antiqu. Soc., Hist. Soc. Dallas, Texas, and of Imp. Soc. Friends of Sci., Moscow. <i>The Chantry, Bradford-on-Avon; and Athenæum Club, S.W.</i> | |
| 1874 | Bell, Sir Lowthian, Bart., F.C.S. Mem. Inst. C.E., Mem. Inst. M.E., Mem. Iron and Steel Inst. <i>Rounton Grange, by Northallerton.</i> | 1881-82 |
| 1884 | Bell, James, C.B. D.Sc. (Dubl.) Ph.D. F.I.C., late Principal of the Inland Revenue Laboratory, Somerset House. 52 <i>Cromwell Road, Hove, Brighton.</i> | |
| 1897 | Bell, Robert, M.D. D.Sc. LL.D. Director of the Geological Survey of Canada. <i>Ottawa, Canada.</i> | |
| 1871 | Besant, William Henry, Sc.D. F.R.A.S. F.C.P.S. Fellow of St. John's College, Cambridge. <i>St. John's College, and Spring Lawn, Harvey Road, Cambridge.</i> | |
| 1886 | Bidwell, Shelford, M.A. Sc.D. LL.B. <i>Riverstone Lodge, Southfields, Wandsworth, S.W.</i> | |
| 1874 | Blanford, William Thomas—Vice-President—LL.D. (Univ. McGill) A.R.S.M. F.G.S. F.R.G.S. F.Z.S. Ord. SS ^{am} . Maur. et Lazar. Ital. Eq.; Soc. Asiat. Beng. Soc. Honor. Medal: Royal. | 1891-93
1901-
V.P.
1892-93
1901- |
| | 72 <i>Bedford Gardens, Campden Hill, Kensington, W.</i> | |

Date of
ElectionService in
Council, &c.

- 1878 Bonney, Rev. Thomas George, D.Sc. LL.D. (Univ. McGill) Sc.D. 1880-82
(Dubl.), F.S.A. F.G.S. Soc. Phil. Cantab. Soc.; Acad. Reg. Hib.
et Ebor. Soc. Honor.; Soc. Géol. Belg. et Soc. Reg. Canard.
Corresp.; Corresp. Mem. Soc. Géol. du Nord de France; Hon.
Canon of Manchester; Emeritus Professor of Geology in University
College, London. 23 *Denning Road, Hampstead, N.W.* 1895
97-99
V.P.
1898-99
- 1899 Booth, Charles, Hon. Sc.D. (Camb.). 24 *Great Cumberland Place, W.*
- 1890 Bosanquet, Robert Holford Macdowall, M.A. Fellow of St. John's
College, Oxford. *Castillo Zamora, Realejo-Alto, Teneriffe.*
- 1888 Bottomley, James Thomson, M.A. D.Sc. F.R.S.E. F.C.S. 13 *Univer-*
sity Gardens, Glasgow.
- 1894 Boulenger, George Albert, F.Z.S. Corresp. Mem. R. Accad. d. Sci.,
Turin. Acad. Sci., New York, Imp. Soc. Friends of Sci., Moscow,
Senckenb. Soc. Frankfurt, Linn. Soc. Bordeaux, Sci. Soc. Boston,
Mus. Nat. Para, Nat. Ver., Magdeburg, Hon. Mem. Soc. Sci.
Chili. 8 *Courtfield Road, South Kensington, S.W.*; and *British*
Museum (Nat. History).
- 1895 Bourne, Alfred Gibbs, D.Sc. Professor of Biology in the Presidency
College, Madras. Fellow of University College, London. *Presi-*
dency College, Madras.
- 1902 Bovey, Henry T., M.A. Professor of Civil Engineering and Applied
Mechanics, McGill University. *McGill University, Montreal,*
Canada.
- 1891 Bower, Frederick Orpen, D.Sc. (Camb.) F.L.S. F.R.S.E. Regius 1901-2
Professor of Botany in the University of Glasgow. 1 *St. John's*
Terrace, Hillhead, Glasgow.
- 1902 Boyce, Rubert. Holt Professor of Pathology, University College,
Liverpool. *Park Lodge, Liverpool.*
- 1888 Boys, Charles Vernon, A.R.S.M. Officier de l'Instr. Publ. France, 1900-2
Hon. Mem. New York Acad. Sci. **Medal: Royal.** 27 *The Grove,*
Boltons, S.W.
- 1894 Bradford, John Rose, M.D. D.Sc. Physician to University College
Hospital; Professor of Materia Medica in University College;
Professor Superintendent of the Brown Institution, London.
8 *Manchester Square, W.*
- 1882 Brady, George Stewardson, M.D. LL.D. D.Sc. Professor of Natural
History in the Durham College of Science, Newcastle. *Mowbray*
Villa, Sunderland.
- 1873 Bramwell, Sir Frederick Joseph, Bart., D.C.L. (Oxon et Dunelm) 1877-78
LL.D. (Cantab. et Univ. McGill) M. Inst. C.E. 5 *Great George*
Street, Westminster, S.W.
- 1875 Brandis, Sir Dietrich, K.C.I.E. Ph.D. LL.D. (Edin.) F.L.S., late
Inspector General of Forests to the Government of India. *Bonn,*
Germany.
- 1897 Broadbent, Sir William Henry, Bart., K.C.V.O. M.D. (Lond.) LL.D.
(Edin. St. Andr.) F.R.C.P. Physician in Ordinary to the King, and
to H.R.H. the Prince of Wales; Consulting Physician to St. Mary's
Hospital, and to the London Fever Hospital. 84 *Brook Street, W.*

Fellows of the Royal Society.

7

Date of Election		Service on Council, &c.
1879	Brown, Alexander Crum, D.Sc. LL.D. M.D. Professor of Chemistry in the University of Edinburgh. 8 <i>Belgrave Crescent, Edinburgh.</i>	1891-92
1898	Brown, Ernest William, M.A. Sc.D. Professor of Mathematics in Haverford College. <i>Haverford College, Haverford, Pennsylvania, U.S.A.</i>	
1889	Brown, Horace T., LL.D. (Edin.) F.C.S. F.I.C. F.G.S. F.L.S. 52 <i>Nevern Square, Kensington, S.W.</i>	1899-1901
1902	Brown, John. Mem. Phys. Soc. <i>Longhurst, Dunmurry, Belfast.</i>	
1883	Browne, Sir James Crichton, Kt., M.D. LL.D. F.R.S.E. 61 <i>Carlisle Place Mansions, Victoria Street, S.W.</i>	
1899	Bruce, David, M.B., Lieut.-Colonel R.A.M.C. 51 <i>Belgrave Road, S.W.</i>	
1874	Brunton, Sir T. Lauder, M.D. Sc.D. LL.D. (Edin.) Hon. LL.D. (Aberdeen) Coll. Reg. Med. Soc. 10 <i>Stratford Place, Oxford Street, W.; and Athenæum Club.</i>	1882-84
1895	Bryan, George Hartley, Sc.D. Professor of Mathematics in the University College of North Wales. <i>Plas Gwyn, Bangor, N. Wales.</i>	
1893	Bryce, Right Hon. James, D.C.L. Hon. Fellow, Trinity and Oriel Colleges, Oxford; Corr. Mem. Inst. de France; Acad. Roy. des Sci. Brux.; R. Accad. delle Sci. Torino, Soc. Romana di Storia Patria; Massachusetts Hist. Soc. 54 <i>Portland Place, W.</i>	1899-1900
1898	Buchan, Alexander, M.A. LL.D. F.R.S.E. Sec. Scott. Meteorol. Soc. 42 <i>Heriot Row, Edinburgh.</i>	
1887	Buchanan, John Young, M.A. F.R.S.E. F.C.S. F.R.G.S. <i>Christ's College, Cambridge.</i>	
1857	Buckton, George Bowdler, F.C.S. F.E.S. F.L.S. Corr. Acad. Nat. Sci. Philad.; Mem. Soc. Entom. France. <i>Weycombe, Haslemere, Surrey.</i>	1861-63
1879	Buller, Sir Walter Lawry, K.C.M.G. D.Sc. (Cantab.) F.L.S. Corr. Mem. Z.S. c/o <i>Agent-General for New Zealand, 13 Victoria Street, S.W.</i>	
1890	Burbury, Samuel Hawksley, M.A. 17 <i>Upper Phillimore Gardens, Kensington, W.</i>	
1900	Burch, George James, M.A. 28 <i>Norham Road, Oxford.</i>	
1893	Burnside, William, M.A. D.Sc. (Dubl.) Hon. Fellow of Pembroke College, Cambridge; Professor of Mathematics, Royal Naval College, Greenwich. <i>The Croft, Bromley Road, Catford, S.E.</i>	1901-2
1894	Gallendar, Hugh Longbourne, M.A., late Fellow of Trinity College, Cambridge; Professor of Physics at the Royal College of Science, London; LL.D. (McGill Univ.) F.R.S. (Canada). 2 <i>Chester Place, Regent's Park, N.W.</i>	1902-
1871	Carruthers, William, F.L.S. F.G.S. F.R.S.E. Fell. Bot. Soc. Edin.; Corresp. Mem. Acad. Nat. Sci. Philad., New York Acad. Sci., Ist. Ven. Sci. Lett. ed Art., Soc. Bot. Copenh., Soc. Géol. Belg.; Hon. Memb. Manch. Lit. and Phil. Soc., Whitby Lit. and Phil. Soc., Chester Nat. Hist. Soc., Nat. Hist. Soc. Glasg., Dumf. and Gall. Nat. Hist. and Antiq. Soc.; Pres. Roy. Micros. Soc.; Past Pres. Linn. Soc.; late Keeper Botanical Department, British	1877-79

- Museum; Consulting Botanist, Royal Agricultural Society of England. 14 *Vermont Road, Norwood, S.E.*
- 1887 Cash, John Theodore, M.D. Regius Professor of Materia Medica in the University of Aberdeen. *Marischal College, Aberdeen.*
- 1882 Chamberlain, Right Hon. Joseph, D.C.L. (Oxon.) LL.D. (Cantab. Glasg. Dubl.) Chancellor of the University of Birmingham. 40 *Prince's Gardens; and Athenæum Club, S.W.*
- 1894 Cheyne, William Watson, C.B. M.B. C.M. (Edin.) F.R.C.S. (Eng.) 1901-2
Professor of Surgery in King's College, London. 75 *Harley Street, W.*
- 1897 Chree, Charles, M.A. Sc.D. (Camb.) LL.D. (Aberd.) Superintendent of the Observatory Department of the National Physical Laboratory. *Old Deer Park, Richmond, Surrey.*
- 1881 Christie, William Henry Mahoney, C.B. M.A. Astronomer Royal, 1883-95
F.R.A.S. F.R. Met. Soc. Corr. Mem. Acad. Sci. Paris, and Imp. 89-91
Acad. Sci. St. Petersb.; For. Memb. Roy. Acad. Sci. Palermo; 1900-01
Corr. Mem. Soc. Spettros. Ital., and Soc. Nationale des Sci. Nat. et V.P.
Math. Cherbourg. *Royal Observatory, Greenwich, S.E.* 1890-91
1900-01
- 1888 Church, Arthur Herbert, M.A. D.Sc. (Oxon.) F.S.A. F.C.S. F.I.C. Professor of Chemistry in the Royal Academy of Arts; Past President of the Mineralogical Society. *Shelsley, Kew Gardens.*
- 1888 Clarke, Alexander Ross, Colonel R.E. C.B. Hon. F.C.P.S. Hon. F.R.S.E. Corr. Mem. Imp. Acad. Sci. St. Petersb. Medal: Royal. *Strathmore, Reigate, Surrey.*
- 1882 Clarke, Charles Baron, M.A. (Cantab.) F.L.S. F.G.S. 13 *Kew* 1888-90
Gardens Road, Kew.
- 1896 Clarke, Sir George Sydenham, Lieut.-Colonel R.E. K.C.M.G. Governor of the State of Victoria in the Commonwealth of Australia. *Government House, Melbourne, Victoria.*
- 1872 Cleland, John, M.D. D.Sc. LL.D. Professor of Anatomy in the 1897-98
University of Glasgow. *University, Glasgow.*
- 1848 Clerk, Henry, Major-General R.A. *Mountfield, 5 Upper Maze Hill,* 1878-80
St. Leonards-on-Sea.
Clifford Allbutt (*see Allbutt*).
- 1868 Clifton, Robert Bellamy, M.A. (Cantab. et. Oxon.) F.R.A.S. Pro- 1871-73
fessor of Experimental Philosophy in the University of Oxford; 85-87
Soc. Lit. Phil. Manc. Soc. Honor. 3 *Bardwell Road, Banbury* 96-98
Road, Oxford; and Athenæum Club. V.P.
1896-98
- 1896 Collie, J. Norman, Ph.D. F.C.S. Professor of Chemistry to the Pharmaceutical Society of Great Britain. 16 *Camden Grove,*
Kensington, W.
- 1885 Common, Andrew Ainslie, F.R.A.S. LL.D. (St. And.) 63 *Eaton* 1893-95
Rise, Ealing, W.
- 1878 Cotterill, James Henry, M.A., late Professor of Applied Mechanics, Royal Naval College, Greenwich. 15 *St. Alban's Mansion, Ken-*
sington Court Gardens, W.

Date of Election	Service on Council, &c.
1878 Crawford, James Ludovic, Earl of, K.T. LL.D. F.R.A.S., Trust. Brit. Mus., Leg. Honor. Com.; Ord. Imp. Bras. Rosae Com.; Acad. Reg. Sci. Berol. Soc. Honor. 2 <i>Cavendish Square, W.</i> ; and <i>Haigh Hall, Wigan.</i>	1878-79
1885 Creak, Ettrick William, C.B. Captain R.N. M. Inst. Elect. Eng. 9 <i>Hervey Road, Blackheath, S.E.</i>	1898-1900
1868 Crofton, Morgan William, D.Sc. Fellow of the Royal University of Ireland.	
1863 Crookes, Sir William. Past Pres. Chem. Soc. and Inst. Elect. Eng. Medals: Royal, Davy. 7 <i>Kensington Park Gardens, W.</i> ; and <i>Athenæum Club, S.W.</i>	1877-79 94-96 V.P. 1895-96
1879 Cross, Right Hon. Richard Assheton, Viscount, G.C.B. G.C.S.I. D.C.L. LL.D. 12 <i>Warwick Square and Athenæum Club, S.W.</i> ; and <i>Eccle Riggs, Broughton-in-Furness, Lancashire.</i>	1880-81
1891 Cunningham, Daniel John, M.D. (Edin. and Dubl.), D.Sc. D.C.L. LL.D. Professor of Anatomy in the University of Dublin. 43 <i>Fitzwilliam Place, Dublin.</i>	1898-99
1889 Cunningham, David Douglas, M.B. C.M. (Edin.) C.I.E. F.L.S. C.M.Z.S. Lieut.-Col. Bengal Medical Service (retired); late Honorary Surgeon to the Viceroy of India; late Professor of Physiology in the Medical College and Fellow of the University of Calcutta. <i>Torre Mount, Torquay.</i>	
1898 Curzon of Kedleston, George Nathaniel, Lord. <i>Government House, Calcutta.</i>	
1880 Dallinger, Rev. William Henry, LL.D. Sc.D. (Dubl.) D.D. (Durh.) F.L.S. Vice-Pres. R.M.S.; Hon. Mem. Amer. Micros. Soc. <i>Ingleside, Newstead Road, Lee, S.E.</i>	
1882 Darwin, Francis, M.A. and M.B. (Cantab.) F.L.S. F.Z.S. Fellow of Christ's College, and Reader in Botany in the Univ. of Cambridge. Mem. Soc. Nat. Sci. et Math. de Cherbourg. <i>Wychfield, Huntingdon Road, Cambridge.</i>	1894-95 1902-
1879 Darwin, George Howard, M.A. LL.D. (Glasg.) Sc.D. (Dubl.) Ph.D. (Padua, Gött.) Hon. Mem. Univ. Padua; Doctor of Mathematics, Univ. Christiania; F.R.A.S. F.M.S. Hon. F.R.S.E. Hon. Mem. R.I.A.; Fellow of Trinity College, and Plumian Professor of Astronomy and Experimental Philosophy in the University of Cambridge; For. Mem. R. Accad. dei Lincei, Rome; and Amer. Acad. Arts and Sci.; Hon. Fell. Astron. and Phys. Soc. Toronto. R. Accad. di Sci. Lett. ed. Arti, Padua; Hon. Mem. New York Acad. Sci.; Mem. Amer. Philos. Soc. Philad.; Corr. Mem. Accad. de Zelanti, Acireale. Medal: Royal. <i>Newnham Grange, Cambridge.</i>	1884-85 1886-87
1895 Davey, Right Hon. Horace, Lord, M.A. D.C.L. 86 <i>Brook Street, W.</i> ; and <i>Verdley Place, Fernhurst, Sussex.</i>	
1900 David, T. W. Edgeworth, B.A. (Oxon.) F.G.S. Professor of Geology in the University of Sydney. <i>The University, Sydney, N.S.W.</i>	
1867 Dawkins, W. Boyd, M.A. D.Sc. (Oxon.) F.S.A. F.G.S. Assoc. Inst. C.E. Hon. Fellow of Jesus Coll. (Oxford); Professor of Geology	1889-91

- and Palaeontology in the Victoria University, Owens Coll. Manchester; Soc. Anthropol. Berol., Acad. Sci. Nat. Philad. et Soc. Nat. Hist. Bost. Corresp. Soc. Phil. Amer. et Acad. Sci. Nov. Ebor. et Soc. Geol. Belg. Soc. Honor. *Woodhurst, Fallowfield, Manchester; and Athenæum Club, S.W.*
- 1861 Debus, Heinrich, Ph.D. F.C.S., late Prof. of Chemistry at the Royal Naval College, Greenwich, and Lecturer at Guy's Hospital. 1870-72 81-83
4 Schlangenberg, Cassel, Hessen, Germany.
- 1892 Devonshire, Spencer Compton Cavendish, Duke of, K.G. M.A. LL.D. Hon. Mem. Inst. C.E. Chancellor of the University of Cambridge. *Devonshire House, Piccadilly, W.; and Chatsworth, Derbyshire.*
- 1877 Dewar, James, M.A. V.P.C.S. F.I.C. F.R.S.E. Hon. LL.D. (Edin., Glasg. and St. And.) D.Sc. (Vict.) Hon. Mem. Inst. C.E., Lit. and Phil. Soc. Manc., Pharm. Soc. Lond., Phil. Soc. Philad., Phil. Soc. Glasg., Soc. Phys. Verein, Frankfurt, R. Ist. Lomb. di Scienze, Lettere ed Arti, Milan; Fellow of Peterhouse College, Cambridge; Jacksonian Prof. of Natural Experimental Philosophy in the University of Cambridge; Fullerian Prof. of Chemistry in the Royal Institution. **Medal: Rumford.** 1 *Scroope Terrace, Cambridge; and Royal Institution, Albemarle Street, W.* 1885-86 1898-1900 V.P. 1899-1900
- 1885 Divers, Edward, M.D. Emeritus Professor of Chemistry in the Imperial University, Japan; Second Class, Order Sacred Mirror; Third Class, Order Rising Sun, Japan. 9 *Rugby Mansions, Kensington, W.*
- 1886 Dixon, Harold Bailly, M.A. F.C.S. Professor of Chemistry and Director of the Chemical Laboratories in Owens College, Manchester. *Owens College, Manchester; Beechey House, Victoria Park, Manchester.* 1902-
- 1896 Downing, Arthur Matthew Weld, M.A. D.Sc. (Dubl.) F.R.A.S. F.R.G.S. Superintendent of the Nautical Almanac: Hon. Mem. Astron. Phys. Soc. Toronto; Hon. Mem. Soc. Astron. Mexico. 3 *Granville Park, S.E.*
- 1855 Ducie, Henry John Moreton, Earl of, F.G.S. *Tortworth Court, Falfield, Gloucestershire.*
- 1893 Dunstan, Wyndham R., M.A. (Oxon.) Sec. C. S. F.I.C. Hon. Mem. Aristotelian Soc.; Corr. Mem. Inst. Égyptien; Director of the Imperial Institute; formerly Professor of Chemistry to the Pharmaceutical Society of Great Britain and Lecturer on Chemistry at St. Thomas' Hospital. *Imperial Institute, South Kensington, S.W.*
- 1875 Dupré, August, Ph.D. (Heidelb.) F.C.S. F.I.C. Emeritus Professor of Chemistry to the Westminster Hospital. 2 *Edinburgh Mansions, Howick Place, Westminster, S.W.; and Mount Edgcumbe, Benhill Road, Sutton, Surrey.*
- Dyer (*see* Thiselton-Dyer).
- 1901 Dyson, Frank Watson, M.A. (Cantab.) Sec. R.A.S. Chief Assistant at the Royal Observatory, Greenwich. 6 *Vanbrugh Hill, Blackheath, S.E.*
- 1895 Elgar, Francis, LL.D. (Glasg.) F.R.S.E. F.S.A. Mem. Inst. C.E.;

Date of
Election

Service on
Council, &c.

- Fellow Royal School of Naval Architecture, V.P. Inst. Naval Architects, Chev. Lég. Hon. France, formerly Professor of Naval Architecture in the University of Glasgow. 18 *Cornwall Terrace, Regent's Park, N.W.*
- 1895 Eliot, Sir John, K.C.I.E. M.A. Meteorological Reporter to the Government of India, and Director-General of Indian Observatories. *Indian Meteorological Office, Simla.*
- 1873 Ellery, Robert Lewis John, C.M.G. F.R.A.S., late Government Astronomer, and Director of the Observatory. *Melbourne, Victoria.*
- 1891 Elliott, Edwin Bailey, M.A. F.R.A.S. Waynflete Professor of Pure Mathematics in the University of Oxford; Fellow of Magdalen College, Oxford. 4 *Bardwell Road, Oxford.* 1899-01
- 1898 Ellis, William, F.R.A.S. F.R. Met. Soc. Memb. Inst. Elect. Eng. late Superintendent of the Magnetical and Meteorological Department, Royal Observatory, Greenwich. 12 *Tanbrugh Hill, Blackheath, S.E.*
- 1897 Elwes, Henry John, F.L.S. F.Z.S. F.E.S. *Colesborne Park, near Cheltenham.*
- 1869 Esson, William, M.A. F.C.S. F.R.A.S. Savilian Professor of Geometry in the University of Oxford, Fellow of New College, Senior Bursar of Merton College. *Merton College; and 13 Bradmore Road, Oxford.*
- 1871 Etheridge, Robert, F.R.S.E. F.G.S. Hon. Memb. Geol. Soc. Belg., N.Z. Inst., Roy. Geol. Soc. Cornwall, Phil. Soc. York, Bristol; *V.P.* Correspond. Imp. Geol. Inst. Vienna. 14 *Carlyle Square, Chelsea, S.W.* 1884-85 1874-75
- 1901 Evans, Arthur John, M.A. LL.D. (Edin.) D. Litt. (Dubl.) V.P.S.A. Fellow of Brasenose College, and Keeper of the Ashmolean Museum, Oxford. *Youlbury, Oxford.*
- 1864 Evans, Sir John, K.C.B. D.C.L. (Oxon., and Trin. Coll. Toronto), LL.D. (Dubl. and Toronto) Sc.D. (Camb.) Trust. Brit. Mus. F.S.A. F.L.S. F.G.S. F.C.S. F.Z.S. Assoc. I.C.E. Pres. Num. Soc. Hon. M.R.I.A. Hon. F.S.A. (Scot.) Comm. of the Ord. of St. Thiago de Port.; Corresp. Inst. de France (Acad. des Inscrip.); Hon. Mem. of the Amer. Phil. Soc., Amer. Acad. Arts and Sciences, Amer. Ethnol. Soc., Num. and Ant. Soc. of Philadelphia, Amer. Num. and Archaeol. Soc. Anthropol. Soc. Washington, Soc. Franç. de Numism., Acad. d'Archéol. de Belg., Soc. Géol. de Belg., Soc. Num. de Belg., Soc. Ital. d'Anthrop., Acad. Sci. and Num. Soc. Sweden, Soc. Roy. Gr. Duc. de Luxembourg, Soc. Anthropol. de Brux, et de Lyons, Soc. de Borda. Dax., Soc. Polym. du Morbihan, Soc. Suisse de Numism. and Archaeol. Soc. of Athens; For. Mem. of the Soc. Ant. of Sweden, Soc. Anthropol. de Paris, and the Numism. Soc. of the Netherlands; Corr. Mem. of the Acad. Sci. Bologna, Soc. Romana di Antrop., Inst. di Corr. Arch., Acad. Valdarn., Anthropol. Soc. of Berlin, and Soc. 1867-68 73-75 78-98 *Treas.* 1878-98

- d'Emul. d'Abbeville. *Nash Mills, Hemel Hempstead; and Athenæum Club.*
- 1879 Everett, Joseph David, M.A. D.C.L. F.R.S.E. late Professor of Natural Philosophy in Queen's College, Belfast. 11 *Leopold Road, Ealing, W.*
- 1893 Ewart, James Cossar, M.D. Professor of Natural History in the University of Edinburgh. *The University, Edinburgh.*
- 1887 Ewing, James Alfred, Hon. M.A. (Camb.) LL.D. (St. And.) F.R.S.E. 1896-98
M. Inst. C.E. Professor of Mechanism and Applied Mechanics in the University of Cambridge; Corresp. Reale Accad. Sci. Turin.
Medal: Royal. *Langdale Lodge, Cambridge.*
- 1900 Farmer, John Bretland, M.A. (Oxon.) F.L.S. Professor of Botany in the Royal College of Science, London. *Claremont House, Wimbledon Common.*
- 1866 Farrar, Very Rev. Frederic William, M.A. D.D. (Cantab.) Dean of Canterbury. *The Deanery, Canterbury.*
- 1877 Fayrer, Sir Joseph, Bart. K.C.S.I. Surgeon-General K.H.P. LL.D. 1895-96
(Edin. and St. And.) M.D. F.R.C.P. (Lond.) F.R.C.S. (Eng. and Edin.) F.R.S.E. Physician Extraordinary to the King. 16 *Devonshire Street, Portland Place, W.*
- 1899 Fenton, Henry John Horstman, M.A. (Camb.) 7 *Mortimer Road, Cambridge.*
- 1877 Ferrers, Rev. Norman Macleod, D.D. Master of Gonville and Caius College, Cambridge. *The Lodge, Gonville and Caius College, Cambridge.*
- 1876 Ferrier, David, M.A. (Aberd.) M.D. (Edin.) LL.D. F.R.C.P. Pro- 1886-98
fessor of Neuro-pathology, King's College, London. **Medal:**
Royal. 34 *Cavendish Square, W.; and Athenæum Club, S.W.*
- 1886 Festing, Edward Robert, C.B. Major-General, R.E. (retired).
Science Museum Director, Victoria and Albert Museum.
30 *Queen's Gate Terrace, S.W.*
- 1892 Fleming, John Ambrose, M.A. (Camb.) D.Sc. (Lond.) late Fellow of St. John's College, Cambridge; Fellow and Professor of Electrical Engineering in University College, London. *University College, Gower Street, W.C.*
- 1889 Fletcher, Lazarus, M.A. (Oxon.) F.G.S. F.C.S. Keeper of Minerals 1895-96
in the British Museum. *Natural History Museum, Cromwell Road; and 35 Woodville Gardens, Ealing, W.* 96-97
- 1887 Forbes, George, M.A. F.R.S.E. F.R.A.S. Mem. Inst. C.E. M.I.E.E. Chev. Lég. Honor. Memb. Astron. Gesell. Vienna, Amer. Phil. Soc., and Franklin Inst.; formerly Professor of Nat. Phil. in Anderson's College, Glasgow. 34 *Great George Street, S.W.*
- 1886 Forsyth, Andrew Russell, M.A. Sc.D. (Camb.) Hon. Sc.D. (Dubl. Vict.) 1893-95
Hon. LL.D. (Glasg.) F.C.P.S. F.R.A.S. Hon. F.R.S.E. Hon. Mem. Lit. Phil. Soc. Manch., Soc. Corr. R. Ist. Lomb.; Sadlerian Professor of Pure Mathematics in the University of Cambridge; Fellow of Trinity College, Cambridge. **Medal: Royal.** *Trinity College, Cambridge; and Athenæum Club, S.W.*

Fellows of the Royal Society.

13

Date of
Election

Service on
Council, &c.

- | | | |
|------|--|---|
| 1892 | Foster, Clement Le Neve, B.A. D.Sc. (Lond.) F.G.S. A.R.S.M. Professor of Mining in the Royal College of Science, London. <i>Royal College of Science, South Kensington, S.W.</i> | |
| 1869 | Foster, George Carey—Vice-President—B.A. LL.D. F.C.S. Principal of, and late Professor of Physics in, University College, London. <i>Ladywalk, Rickmansworth, Herts; and Athenæum Club, S.W.</i> | 1870-72
77-78
83-85
91-93
1901-
V.P.
1891-93
1902- |
| 1872 | Foster, Sir Michael, K.C.B.—Secretary—M.D. B.A. (Lond.) Hon. M.A. (Cantab.) D.C.L. (Oxon.) LL.D. (Glasg., St. And. and Univ. McGill) Sc.D. (Dubl.) F.L.S. F.C.S. For. Mem. R. Accad. dei Lincei, Roma, R. Accad. delle Scienze, Torino, Amer. Acad. Sci.; Corresp. Étrang. Acad. Roy. de Méd. Belg.; Hon. Mem. Roy. Irish Acad., Lit. and Phil. Soc. Manc., Asiat. Soc. Beng., Roy. Soc. N.S. Wales, Med. Chir. Soc., Roy. Agric. Soc., Pharm. Soc. Lond., Bost. Soc. Nat. Hist., Soc. Helvét. des Sci. Nat., and Acad. Imp. Milit. de Méd. St. Petersburg; Mem. Assoc. Soc. de Biol. Paris; Mem. K. Vetensk.-Soc. Upsala; Honorary Perpetual President of the International Congress of Physiology; Professor of Physiology in the University of Cambridge. <i>Great Shelford, Cambridge.</i> | 1876-77
81-
Sec.
1881- |
| 1891 | Frankland, Percy Faraday, Ph.D., M.Sc. A.R.S.M. Professor of Chemistry in the University of Birmingham. <i>The University, Birmingham.</i> | |
| 1877 | Fraser, Sir Thomas Richard, M.D. (Edin.) Pres. R.C.P. & F.R.S. (Edin.) LL.D. (Aberd. and Glasg.) Professor of Materia Medica and Clinical Medicine in the University of Edinburgh. <i>13 Drumsheugh Gardens, Edinburgh.</i> | |
| 1894 | Froude, Robert Edmund. Superintendent of the Admiralty Experimental Works, Gosport. <i>North Lodge, Alverstoke, Gosport.</i> | |
| 1883 | Fry, Right Hon. Sir Edward, B.A. (Lond.) D.C.L. (Oxon.) LL.D. (Edin.) F.S.A. F.L.S. Fellow of the University of London, and of University College, London; and Hon. Fellow, Balliol Coll., Oxon. <i>Failand House, Failand, near Bristol.</i> | |
| 1892 | Gadow, Hans Friedrich, Ph.D. (Jena) Hon. M.A. (Camb.) Strickland | 1899-1901 |
| | Curator and Lecturer on the Advanced Morphology of Vertebrata in the University of Cambridge. <i>Zoological Laboratory, Cambridge.</i> | |
| 1893 | Gairdner, Sir William Tennant, K.C.B. M.D. (Edin.) Hon. M.D. (Dubl.) Hon. LL.D. (Edin.) F.R.C.P. (Edin.) Hon. F.R.C.P. (Ireland) late Professor of Medicine in the University of Glasgow; Hon. Physician in Ordinary to the King in Scotland. <i>32 George Square, Edinburgh.</i> | |

Date of Election	Service on Council, &c.
1860 Galton, Francis, M.A. (Cantab.) D.C.L. (Oxon.) Sc.D. (Camb.) Officier de l'Instruction Publique, France; Corresp. Memb. of the Geograph. Societies of Berlin and Vienna, and of Anthropol. Soc. of Rome; Hon. Memb. of Geograph. Soc. of Italy, and Inst. Internat. de Statistique. Medal: Royal, Darwin. 42 Rutland Gate, S.W.	1865-66 70-72 76-77 82-84 V.P. 1870-72 76-77 83-84
1899 Gamble, James Sykes, C.I.E. M.A. (Oxon.) F.L.S., late Conservator of Forests in India, and Director of the Imperial Forest School, Dehra Dun. <i>Highfield, East Liss, Hants; and Athenæum Club.</i>	
1872 Gamgee, Arthur, M.D. F.R.C.P. (Lond.) Emeritus Professor of Physiology in Owens College, Victoria University; late Fullerian Professor of Physiology in the Royal Institution. 5 Avenue du Kursaal, Montreux, Switzerland.	1886-88
1890 Gardiner, Walter, M.A. Fellow and Bursar of Clare College, Cambridge. Medal: Royal. <i>St. Awdreys, Hill's Road, Cambridge.</i>	
1858 Garrod, Sir Alfred Baring, M.D. Coll. Reg. Med. Socius; Physician Extraordinary to the Queen; Consulting Physician to King's College Hospital. 10 Harley Street, W.	
1882 Gaskell, Walter Holbrook, M.A. M.D. (Camb.) LL.D. (Edin. and Univ. McGill) Fellow of Trinity Hall and University Lecturer in Physiology, Cambridge; F.R. Med. Chir. Soc., Corr. Mem. Acad. Imp. Milit. de Méd. St. Petersburg. Medal: Royal. <i>The Uplands, Great Shelford, near Cambridge.</i>	1895-97
1865 Geikie, Sir Archibald, Knt. D.C.L. (Oxon.) Sc.D. (Cantab. Dubl.) LL.D. (Edin. Glasg. St. And.) F.R.S.E. F.G.S. F.Z.S., late Director-General of the Geological Survey of the United Kingdom, and of the Museum of Practical Geology, London; Inst. Franç. (Acad. Sci.), Accad. Reg. Lincei, Romæ, Acad. Reg. Berol., Acad. Reg. Stockholm, Acad. Imp. Sci. Vindob., Acad. Reg. Belg., Acad. Reg. Bavar. Monach. Acad. Nat. Amer., Soc.; Soc. Reg. Sci. Göttingen, Caesar. Leop. Carol. Acad. Sci. Nat., Soc. Imp. Mineral. Petropol., Soc. Imp. Nat. Sci. Mosquen, Acad. Reg. Valdarnese del Poggio, Soc. Geogr. Ital. et Batav., Soc. Geol. Edin., Glasg., Liverp., Manchestr., Franc., Belg., Stockholm, Soc. Phil. Cantab. Ebor. et Americ., Soc. Sci. Christiania, Soc. Medal: Royal. 10 Chester Terrace, Regent's Park, N.W.	1885-87 89-93 For. Sec. 1889-93 V.P. 1885-87
1875 Geikie, James, LL.D. D.C.L. (Dunelm.) F.R.S.E. F.R.G.S. F.G.S. Murchison Professor of Geology and Mineralogy in the University of Edinburgh; Hon. Memb. Phil. Soc. York, Lit. Phil. Soc. Manch., Geol. Soc. Stockholm, Vidensk.-Selsk. Christiania, Geol. Palæont. Hydrol. Belg., Gesell. f. Erdk. Berlin, Soc. Geogr. Neuchâtel; Memb. Amer. Phil. Soc., Corresp. Memb. Acad. Sci. Philadelphia, Acad. Sci. New York. <i>Kilmorie, Colinton Road, Edinburgh.</i>	
1892 Giffen, Sir Robert, K.C.B. LL.D. (Glasg.). <i>Chanctonbury, Haywards Heath.</i>	

Date of
Election

Service on
Council, &c.

- 1891 Gilchrist, Percy Carlyle, A.R.S.M. *Frogna! Bank, Finchley Road, Hampstead, N.W.*
- 1883 Gill, Sir David, K.C.B. LL.D. (Aberd. and Edin.) Hon. F.R.S.E. F.R.A.S. F.R.G.S. His Majesty's Astronomer at the Cape of Good Hope; *Medjidie*, Third Order, Turkey; Trustee of the South African Museum, Corresp. Inst. Fr. (Acad. Sci.); Corresp. Mem. Acad. Imp. Sci. S. Petersb.; Akad. Wiss. Berl.; Soc. degli Spettroscop. Ital. Rome; Soc. Nat. des Sci. Nat. et Math. Cherb.; Soc. Geogr. Lisbon; For. Mem. Akad. Wetensch. Amsterd.; Nat. Acad. Sci. Washington, and Soc. Holl. des Sci. Haarlem; Hon. Mem. New York Acad. Sci. *Royal Observatory, Cape of Good Hope; and Athenæum Club.*
- 1849 Glaisher, James, F.R.A.S. Ord. Bras. Rosae Eq. *The Shola, Heathfield Road, South Croydon.*
- 1875 Glaisher, James Whitbread Lee, Sc.D. (Camb. and Dubl.) Past President 1883-84
R.A.S. and C.P.S. and Lond. Math. Soc. *Trinity College, Cambridge.* 90-92
- 1882 Glazebrook, Richard Tetley, M.A. Hon. Sc.D. (Vict.) F.C.P.S. Fellow 1892-94
of Trinity College, Cambridge; Director of the National Physical Laboratory; late Principal of University College, Liverpool. *Bushy House, Teddington, Middlesex; and Athenæum Club, S.W.*
- 1882 Godman, Frederick Ducane, D.C.L. (Oxon.) F.L.S. F.G.S. F.E.S. 1891-93
Trustee of the British Museum. 10 *Chandos Street, Cavendish Square, W.; and South Lodge, Horsham.*
- 1880 Godwin-Austen, Henry Haversham, Lieut.-Col. F.Z.S. F.R.G.S. *Nore, Godalming.*
- 1902 Goldie, Right Hon. Sir George D. Taubman, K.C.M.G. 11 *Queen's Gate Gardens, S.W.*
- 1865 Gore, George, LL.D. (Edin.). *Inst. Sci. Research, 20 Easy Row, Birmingham.*
- 1896 Gorst, Right Hon. Sir John Eldon, K.C. M.A. Hon. Fellow of St. 1901-
John's College, Cambridge. *Queen Anne's Mansions, St. James's Park, S.W.; and Howes Close, Cambridge.*
- 1872 Goschen, Right Hon. George Joachim, Viscount, M.A. *Seacox Heath, Hawkhurst, Kent.*
- 1892 Gotch, Francis, D.Sc. M.A. (Oxon.) Waynflete Professor of Physiology in the University of Oxford. *The Lawn, Banbury Road, Oxford.*
- 1887 Gowers, Sir William Richard, M.D. F.R.C.P. Fellow of University College, London; Consulting Physician to University College Hospital; Physician to the National Hospital for the Paralysed and Epileptic. 50 *Queen Anne Street, W.*
- 1881 Grant Duff, Right Hon. Sir Mountstuart Elphinstone, G.C.S.I. 11 *Chelsea Embankment; Lexden Park, Colchester; and Athenæum Club, S.W.*
- 1896 Gray, Andrew, M.A. LL.D. (Glasg.) F.R.S.E. Professor of Natural Philosophy in the University of Glasgow. 11 *The University, Glasgow.*

Date of
ElectionService on
Council, &c.

- 1895 Green, Joseph Reynolds, M.A. Sc.D. (Camb.) B.Sc. (Lond.) F.L.S.
Professor of Botany to the Pharmaceutical Society of Great
Britain. 61A *St. Andrew's Street, Cambridge.*
- 1888 Greenhill, Alfred George, M.A. Professor of Mathematics in the 1896-97
Ordnance College, Woolwich; Officier d'Académie, Paris; For.
Mem. R. Accad. dei Lincei. 10 *New Inn, W.C.*
- 1878 Greenwell, Rev. William, M.A. D.C.L. Canon of Durham, F.S.A.
Durham.
- 1901 Gregory, John Walter, D.Sc. F.G.S. Professor of Geology in the
University of Melbourne. *The University, Melbourne, Victoria.*
- 1895 Griffiths, Ernest Howard, M.A. Principal and Professor of Physics,
University College of South Wales and Monmouthshire; Fellow
of Sidney Sussex College, Cambridge. *University College, Cardiff.*
- 1883 Groves, Charles Edward, F.C.S. F.I.C. 352 *Kennington Road, S.E.*
- 1883 Grubb, Sir Howard, F.R.A.S. *Rockdale, Orwell Road, Rathgar,
Dublin.*
- 1867 Günther, Albert C. L. G., M.A. M.D. Ph.D. F.L.S. F.Z.S. late 1874-76
Keeper of the Zoological Department in the British Museum,
Soc. Reg. Scient. Upsal; Soc. Phys.-Med. ad Rhenum infer., Soc. V.P.
Zool.-Bot. Vindob. Socius ord.; Reg. Acad. Panormit. Scient., 1875-76
Soc. Asiat. Bengal., Instit. Nov. Zel., Soc. Linn. Nov. Gall., Soc.
Nat. Scrutat. Basil., Soc. Zool. Gall., Soc. Lit. et Phil. Liverpool,
Soc. Roman. Zoolog. Socius Honor.; Imp. Acad. Scient. Petropol.,
Reg. Acad. Scient. Taurin., Reg. Acad. Scient. Suec., Soc. Senckenb.
Nat. Scrutat. Francof. Acad. Scient. nat. Philad., Acad. Scient.
nat. Californ., Soc. Scient. nat. Cherbourg, Soc. Human. et Scient.
Gall. Merid. Orient. Socius extran. Medal: Royal. *Lichfield
Road, Kew Gardens, Surrey.*
- 1899 Haddon, Alfred Cort, M.A. Sc.D. M.R.I.A. University Lecturer in
Ethnology, Cambridge. *Inisfail, Hills Road, Cambridge.*
- 1897 Haldane, John Scott, M.A. M.D. M.R.C.P. (Edin.) Lecturer in
Physiology in the University of Oxford. 4 *St. Margaret's Road,
Oxford.*
- 1891 Halliburton, William Dobinson, M.D. B.Sc. F.R.C.P. Professor of 1898-1900
Physiology in King's College, London. *Church Cottage, 17 Mary-
lebone Road, N.W.*
- 1887 Halsbury, Right Hon. Hardinge Stanley Giffard, Earl of, M.A. D.C.L.
High Steward of the University of Oxford. 4 *Ennismore Gar-
dens, W.*
- 1863 Harcourt, Augustus George Vernon, M.A. (Oxon.) D.C.L. (Dunelm.) 1878-80
LL.D. (Univ. McGill) V.P.C.S. Lee's Reader in Chemistry at
Christ Church. *St. Clare, Ryde, Isle of Wight; and Athenæum
Club, S.W.*
- 1881 Harcourt, Right Hon. Sir William George Granville Venables Vernon,
Knt., M.A. Trust. Brit. Mus. *Malwood, Lyndhurst, Hants.*
- 1902 Hardy, William Bate, M.A. Demonstrator of Physiology, University
of Cambridge. 9 *Park Terrace, Cambridge.*

- 1902 Harker, Alfred, M.A. Demonstrator in Petrology, University of Cambridge. *St. John's College, Cambridge.*
- 1863 Harley, Rev. Robert, M.A. (Oxon.) F.R.A.S. Lit. et Phil. Soc. Manc. et Soc. Reg. Queensl. Soc. Honor. *Rosslyn, Westbourne Road, Forest Hill, S.E.; and Athenæum Club, S.W.*
- 1898 Harmer, Sidney Frederic, Sc.D. Superintendent of the University Museum of Zoology, and Fellow of King's College, Cambridge. *King's College, Cambridge.*
- 1884 Hartley, Walter Noel, D.Sc. (Roy. Univ. Ireland), F.R.S.E. F.I.C. Hon. Fellow of King's College, London, Professor of Chemistry in the Royal College of Science for Ireland. *Royal College of Science, Stephen's Green, Dublin; and 36 Waterloo Road, Dublin.*
- 1897 Haswell, William, M.A. D.Sc. (Edin.) F.L.S. Corr. Mem. Roy. Soc. Tasman.; Mem. K. Leop. Carol. Deutsche Akad. Halle; Corr. Mem. Soc. Biol. Paris; Challis Professor of Zoology in the University of Sydney. *The University, Sydney, N.S.W.*
- 1864 Hay, Right Hon. Sir John Charles Dalrymple, Bart., Admiral, G.C.B. D.C.L. (Oxon.) F.R.G.S. V.P. Inst. Naval Architects. 108 *St. George's Square, S.W.; and Craigenveoch, Wigtownshire, N.B.*
- 1876 Hayward, Robert Baldwin, M.A. *Ashcombe, Shanklin, Isle of Wight.*
- 1899 Head, Henry, M.A. M.D. F.R.C.P. M.R.C.S. 143 *Harley Street, W.*
- 1801 Heaviside, Oliver, Hon. Mem. Lit. Phil. Soc. Manchester; Amer. Acad. Arts and Sci. *Bradley View, Newton Abbott, Devon.*
- 1866 Hector, Sir James, K.C.M.G. Ord. Cr. Pruss. M.D. F.G.S. F.L.S. F.R.S.E. C.M.Z.S. Hon. Mem. of the Royal Societies of Victoria, New South Wales, South Australia, and Tasmania; For. Mem. Amer. Acad. Sci., Amer. Inst. Mining Engs., and K. Leop. Carol. Acad.; Director of the Geological Survey, Meteorological and Weather Departments, and of the New Zealand Institute; Chancellor of the New Zealand University. *Wellington, New Zealand.*
- 1899 Hele-Shaw, Henry Selby, LL.D. (St. Andr.) M. Inst. C.E. M. Inst. M.E. Harrison Professor of Engineering in University College, Liverpool. 27 *Ullet Road, Sefton Park, Liverpool.*
- 1889 Hemsley, William Botting, F.L.S. Hon. Memb. Nat. Hist. Soc. Mexico; Keeper of the Herbarium, Royal Gardens, Kew. *Royal Gardens, Kew.*
- 1875 Hennessey, John Baboneau Nickterlien, C.I.E. M.A. F.R.A.S. F.R.G.S. Late Deputy Surveyor-General in charge of the Trigonometrical Surveys, Survey of India. *Merrimu, 18 Alleyn Park, West Dulwich, S.E.; and Athenæum Club, S.W.*
- 1874 Henrici, Olaus Magnus Friedrich Erdmann, Ph.D. LL.D. (St. And.) 1883-83 Professor of Mechanics and Mathematics in the City and Guilds of London Institute. *Central Technical College, Exhibition Road, S.W.; and 34 Clarendon Road, Notting Hill, W.*
- 1802 Herdman, William Abbott, D.Sc. F.R.S.E. F.L.S. Professor of Natural History in University College, Liverpool. *Croxteth Lodge, Ullet Road, Liverpool.*

Date of
ElectionService on
Council, &c.

- 1884 Herschel, Alexander Stewart, M.A. Hon. D.C.L. (Durham), F.R.A.S. Honorary Professor of Physics and Experimental Philosophy in the Durham College of Science, Newcastle-on-Tyne. *Observatory House Slough, Bucks.*
- 1871 Herschel, John, Col. R.E. F.R.A.S. Late Deputy Superintendent, Great Trigonometrical Survey of India. *Observatory House, Slough, Bucks.*
- 1895 Heycock, Charles Thomas, M.A. Lecturer on Natural Science, King's College, Cambridge. 24 Fitzwilliam Street, Cambridge.
- 1885 Hicks, William Mitchinson, M.A. D.Sc. Late Fellow of St. John's College, Cambridge; Principal and Professor of Physics in University College, Sheffield. *Dunheved, Endcliffe Crescent, Sheffield.* 1900-2
- 1895 Hickson, Sydney John, D.Sc. (Lond.) M.A. (Camb.) Hon. M.A. (Oxon.) F.Z.S. Hon. Fellow of Downing College, Cambridge; Professor of Zoology in Owens College, Manchester; Hon. Mem. K. Inst. Taal-Land-en Volkenkunde Neder.-Indië. *Ellesmere House, Withington, Manchester.*
- 1900 Hill, Leonard, M.B. Lecturer on Physiology in the London Hospital Medical College. *Osborne House, Loughton, Essex.*
- 1894 Hill, Micaiah J. M., M.A. Sc.D. Professor of Mathematics, University College, London. *Lakeview, Northwood, R.S.O., Middlesex.*
- 1896 Hinde, George Jennings, Ph.D. (Munich) F.G.S. *Ivythorn, 24 Avondale Road, South Croydon.*
- 1893 Hobson, Ernest William, Sc.D. Fellow of Christ's College, Cambridge. *The Gables, Mount Pleasant, Cambridge.*
- 1895 Holden, Henry Capel Lofft, Lieut.-Col. B.A. 2 St. John's Park, *Blackheath; and Royal Arsenal, Woolwich.*
- 1847 Hooker, Sir Joseph Dalton, G.C.S.I. C.B.—Past President—M.D. 1853-54
D.C.L. LL.D. F.L.S. F.G.S. F.R.G.S. Hon. Mem. Roy. Bot. Soc. 56-58
and Roy. Med. Chir. Soc., London; Bot. and Med. Socs., Edin.; 62-64
R.I.A., Dubl.; Nat. Hist. Soc. Newcastle; Camb. Philos. Soc.; 70-80
Asiat. Soc. Beng.; and New Zeal Institute. Pruss. Ord. "Pour la 84-86
Mérite;" Member of Acad. Sci., Paris; Acad. Imp. Sci.,
St. Petersburg; K. Akad. der Wissensch., K. K. Geogr. Gesell., and
Hort. Soc. of Vienna; K. Akad. der Wissensch., Berlin; Accad.
delle Sci. dell' Istit. Bologna; Acad. Roy. des Sci. Brussels; Reale
Accad. dei Georgofili, Florence; Kong. Dansk. Vidensk. Selsk.
Copenh.; K. Gesell. der Wiss. Gött.; K. Danske Vidensk. Selskab.
Stockholm; K. Vetensk. Soc., Upsala; K. Phys.-oekonom. Gesell.
Königsb.; Soc. Vellosiana Rio de Janeiro; K. Leopold.-Carol.
Deut. Akad. der Naturf., Halle; Senck. Naturf. Gesell. Frankf. a
M.; K. Baier. Bot. Gesell., Ratisbon; R. Accad. dei Lincei, Rome;
Amer. Acad. of Sci., Boston. Corresp. Mem. of Dubl. Nat. Hist.
Soc. and Agricult. Soc. of Paris. For. Mem. of Acad. de Méd.,
Paris, and Nat. Acad. of Sci., Washington. **Medals:** Copley,
Royal, Darwin. *The Camp, Sunningdale, Berkshire.*

Pres.
1873-78
V.P.
1857-58
63-64
78-80
84-86

- 1900 Horne, John, LL.D. (Aberd.) F.R.S.E. F.G.S. *Geological Survey Office, Sheriff Court Buildings, Edinburgh; and 12 Keith Crescent, Blackhall, Midlothian.*
- 1886 Horsaey, Sir Victor Alexander Haden, B.S. F.R.C.S. M.D. (Halle), late 1898-99
Professor of Pathology in University College, London. **Medal:**
Royal. 25 Cavendish Square, W.; and *Athenæum Club*, S.W.
- 1902 Hough, Sydney Samuel. Chief Assistant in the Royal Observatory,
Cape of Good Hope. *Royal Observatory, Cape Town.*
- 1897 Howes, George Bond, LL.D. (St. Andr.) D.Sc. (Vict.) F.L.S. Vice-Pres.
Z.S. Professor of Zoology in the Royal College of Science, London.
Ingledeane, Barrowgate Road, Chiswick, W.
- 1893 Howorth, Sir Henry Hoyle, K.C.I.E. D.C.L. 30 *Collingham Place,*
Cromwell Road, S.W.
- 1884 Hudleston, Wilfrid H., M.A. F.G.S. F.C.S. 8 *Stanhope Gardens,*
South Kensington, S.W.
- 1889 Hudson, Charles Thomas, M.A., LL.D. (Camb.). *Hillside, Clarence*
Road, Shanklin, Isle of Wight.
- 1865 Huggins, Sir William, K.C.B. O.M.—**President**—D.C.L. (Oxon.) LL.D. 1866-68
(Cantab. Edin. Dubl. et St. And.) D.Sc. (Viet.) Ph.D. (Lugd. Bat.) 69-71
Hon. F.R.S.E. F.R.A.S. Ord. Imp. Bras. Rosae; Comm. Inst. Fr. 80-82
(Acad. Sci.), Acad. Reg. Sci. Berol., Soc. Reg. Sci. Gött. et Soc. 88-89
Spettros. Ital. Mem. Corr.; Acad. Lync. Romæ Soc.; Acad. Sci. 95-97
Reg. Boruss., Soc. Phil. Amer. Philad., Acad. Amer. Art. et Sci. 1900-
Boston, Reg. Sci. Hafn., Physiogr. Lund, Reg. Boie. Marob. Acad. V.P.
Reg. Sci., Acad. Reg. Hib., Soc. Reg. Dubl., Lit. Phil. Manc., Soc. 1870-71
Astr. de France, Soc. Astr. et Phys. Toronto, Soc. Hist. Dallas et 95-97
Soc. Reg. Nov. Camb. Austr. Soc. Honor.; Russ. Ast. Soc.. Ast. **Pres.**
Soc. Mex. et Soc. Nat. Cherbourg, For. Mem. **Medals:** Copley, 1900-
Rumford, Royal. 90 *Upper Tulse Hill; and Athenæum Club*, S.W.
- 1889 Hughes, Thomas McKenny, M.A. Trin. Coll. Camb. F.G.S. F.S.A.
Professorial Fellow of Clare College, Camb.; Chev. Ord. SS^{sum}
Maur. et Lazar. Ital.; Corresp. Memb. Soc. Géol. de Belg. and
Soc. Géol. de Fr.; Woodwardian Professor of Geology in the
University of Cambridge. 18 *Hills Road, Cambridge.*
- 1867 Hull, Edward, M.A. LL.D. (Glasg.) F.G.S. late Director of the
Geological Survey of Ireland, and Professor of Geology in the
Royal College of Science; Master in Engineering (Hon. Caus.
Dubl.); Hon. Mem. Acad. Sci. Amer. Philad., Soc. Géol. Belg.,
Geol. Soc. Edin., Glasg., Manch. 14 *Stanley Gardens, Notting*
Hill, W.
- 1882 Hutchinson, Jonathan, LL.D. (Glasg. and Camb.) M.D. (Dubl.)
F.R.C.S. Corr. Mem. Soc. Chir. Paris; Hon. Mem. Soc. Dermat.
Nov. Ebor. Formerly President of and Professor of Pathology
and Surgery in the Royal College of Surgeons. 15 *Cavendish*
Square, W.
- 1892 Hutton, Frederick Wollaston, Captain. F.G.S. C.M.Z.S. Curator of
the Canterbury Museum, Christchurch; Cor. Mem. Roy. Soc.
Tas.; Hon. Mem. Roy. Soc. N.S.W. Corresp. du Mus. d'Hist. Nat.

- Paris, Acad. Nat. Sci. Philad., Ornith. Ver. Wien, and K. K. Geol. Reichsanst. Wien. *Canterbury Museum, Christchurch, New Zealand.*
- 1901 Jackson, Henry Bradwardine, Captain R.N. Assistant Director of Torpedoes, Admiralty. 5 *Cardinal Mansions, Victoria Street, S.W.*
- 1878 Jackson, John Hughlings, M.D. Coll. Reg. Med. Soc., Consulting Physician to the London Hospital. 3 *Manchester Square, W.*
- 1885 Japp, Francis Robert, M.A. LL.D. (St. And.) F.I.C. F.C.S. Professor of Chemistry in the University of Aberdeen. *University, Aberdeen.*
- 1894 Jarvis-Smith, Rev. Frederick John, M.A. (Oxon.) University Lecturer in Mechanics, and Millard Lecturer in Experimental Mechanics, Trinity College, Oxford. *Millard Laboratory, 3 St. Giles, Oxford.*
- 1892 Joly, John, M.A. B.E. D.Sc. Professor of Geology and Mineralogy in the University of Dublin. 12 *Northbrook Road, Leeson Park, Dublin.*
- 1872 Jones, Thomas Rupert, F.G.S. Hon. Mem. Gesell. Isis, Dresden, Soc. Belg. de Microsc., Soc. Géol. Hydrol. Palæontol. Brux., Geol. Assoc. Lond., Geol. Soc. Glasg., Roy. Irish Geol. Soc., and Anthropol. Inst. Lond.; Corresp. of the K.-K. Geolog. Reichsanst. Wien, Acad. Nat. Sci. Philad., Roy. Malacol. Soc. Belg., and Geol. Soc. Edin. 17 *Parson's Green, Fulham, S.W.*
- 1877 Judd, John Wesley—Vice-President—C.B. LL.D. F.G.S. Professor of Geology in the Royal College of Science, London, and Dean of the College; Soc. Phil. Ebor., Sci. Nat. Deva., Soc. Reg. Sydney, Soc. Asiat. Beng., Soc. Géol. du Nord, France, Soc. Belg. de Géol. de Pal. et d'Hydrol., Soc. Honor.; Acad. Sci. Nat. Philad., Soc. Géol. Belg. Brux., Inst. Imp. Geol. Vindob. Corresp. 22 *Cumberland Road, Kew; Royal College of Science, South Kensington; and Athenæum Club, S.W.*
- 1851 Kelvin, Right Hon. William Thomson, Lord, O.M.—Past President—G.C.V.O. D.C.L. (Oxon.) LL.D. (Camb. Dubl. Edin. Glasg. Princeton, Toronto) F.R.S.E. Hon. Mem. Inst. C.E., and Elect. Eng. late Professor of Natural Philosophy in the University of Glasgow, and Fellow of St. Peter's College, Cambridge; Grand Officier of the Legion of Honour of France. Ord. of First Class of the Sacred Treasure of Japan; Knt. Pruss. Ord. "Pour le Mérite"; Comm. Ord. of Leopold, Belgium; Comm. Imp. Ord. of the Rose, Brazil; Assoc. Étrang. Inst. Fr. (Acad. Sci.) Paris; Corresp. Mem. R. Ist. Lomb. Milan, R. Accad. dei Lincei, Rome; For. Mem. Königl. Preuss. Akad. Berl., Königl. Gesell. Wiss. Gött., Soc. Ital. di Scienze, Milan, Soc. Reale di Napoli, Kongl. Svenska Vetenskaps Akad. Stockholm, Acad. Nat. Sci. Philad.; Hon. Mem. Acad. Imp. Sci. Vienna, Acad. Nov. Lync. Rom., United Service Inst. Lond., Lit. and Phil. Soc. Manch., Phil. Soc. Glasg., Roy. Irish Acad., Asiat. Soc. Bengal. **Medals:** Copley, Royal. *Netherhall, Largs, Ayrshire; 25 Eaton Place, S.W., and Athenæum Club, S.W.*

1887-89
1902-
V.P.
1902-

1890-96
Pres.
1890-95

Date of
Election

Service on
Council, &c.

- | | | |
|------|--|---|
| 1881 | Kempe, Alfred Bray, M.A.—Treasurer and Vice-President—
2 Paper Buildings, Temple, E.C.; and 10 Porchester Square,
Hyde Park, W. | 1897—
Treas.
1898— |
| 1887 | Kennedy, Alexander B. W., LL.D. Mem. Inst. C.E. Past Pres. Inst.
M.E., Emeritus Professor of Engineering and Mechanical Tech-
nology in University College, London. 1 Queen Anne Street,
Cavendish Square, W. | 1895-96 |
| 1890 | Kerr, Rev. John, LL.D. Mathematical Lecturer in the Free Church
Training College, Glasgow. Medal: Royal. 113 Hill Street,
Glasgow. | |
| 1902 | Kidston, Robert, F.R.S.E. 12 Clarendon Place, Stirling, N.B. | |
| 1887 | King, Sir George, K.C.I.E. M.B. LL.D. F.L.S. Late Director of the
Botanical Survey of India, Superintendent of the Royal Botanical
Gardens, Calcutta, and of the Government Cinchona Plantations,
Darjeeling. Athenæum Club; and c/o Messrs. Grindlay and Co.,
54 Parliament Street, S.W. | |
| | Kingsburgh (see Macdonald, J. H. A.). | |
| 1897 | Kipping, F. Stanley, D.Sc. (Lond.) Ph.D. (Munich). Professor of
Chemistry, University College, Nottingham. University College,
Nottingham. | |
| 1887 | Kirk, Sir John, G.C.M.G. K.C.B. M.D. LL.D. D.C.L. (Oxon.) D.Sc.
(Camb.) F.L.S. F.R.G.S. Wavertree, Sevenoaks, Kent; and
Athenæum Club, S.W. | 1893-95
V.P.
1894-95. |
| 1875 | Klein, Edward Emanuel, M.D. Late Lecturer on General Anatomy
and Physiology in the Medical School, St. Bartholomew's Hospital.
Harewood, Riverdale Gardens, Twickenham Park. | 1888-90 |
| 1934 | Lamb, Horace, M.A. (Cantab.) LL.D. (Glasg.) Professor of Mathe-
matics in the Owens College, Manchester. Medal: Royal.
6 Wilbraham Road, Fallowfield, Manchester. | 1894-96: |
| 1883 | Langley, John Newport, M.A. D.Sc. Fellow and Lecturer of Trinity
College. Deputy Professor of Physiology, and Lecturer on
Histology in the University of Cambridge; Corr. Mem. Soc. de
Biol., Paris, and Royal Military Acad., St. Petersburg; Hon Mem.
Soc. Aliéniste et Neurol. Univ. Imp. Kazan. Medal: Royal.
Trinity College, Cambridge; and Athenæum Club, S.W. | 1897-98. |
| 1875 | Lankester, Edwin Ray, M.A. (Oxon.) LL.D. (St. And.) Director of the
Natural History Departments, British Museum; late Fullerian
Professor of Physiology in the Royal Institution; Honorary
Fellow of Exeter College, Oxford; Corr. Inst. Fr. (Acad. Sci.); Hon.
Mem. Camb. Phil. Soc., Roy. Phys. Soc. Edin., Soc. de Biol. Paris,
and New York Acad. Sci.; Corr. Mem. Acad. Imp. Sci. St. Peters-
burg; Corr. Acad. Nat. Sci. Philadelphia; For. Mem. R. Accad.
dei Lincei; Böhm. Gesell. Wiss.; Assoc. Roy. Acad. Belg.; Corr.
Mem. Roy. Soc. Sci. Gött. Medal: Royal. British Museum
(Natural History), Cromwell Road, S.W.; and Athenæum Club, S.W. | 1882-83
88-90
94-96
V.P.
1895-96
82-83 |
| 1898 | Lapworth, Charles, LL.D. (Aberd.), Pres. G.S. Professor of Geology
in the University of Birmingham. Medal: Royal. 48 Frederick
Road, Edgbaston Birmingham. | 1895-97 |

Date of
ElectionService on
Council, &c.

- 1892 Larmor, Joseph—**Secretary**—M.A. D.Sc. (Lond.) LL.D. (Glasg.) 1897-99
F.R.A.S. Fellow of St. John's College, Cambridge; Past. Pres. 1901-
Camb. Phil. Soc.; formerly Professor of Natural Philosophy in **Sec.**
Queen's College, Galway, and Fellow of the Royal University of 1901-
Ireland. *St. John's College, Cambridge.*
- 1890 Lea, Arthur Sheridan, M.A. Sc.D. Fellow, and formerly Lecturer in
Physiology, and Tutor of Gonville and Caius College, sometime
Assistant Lecturer of Trinity College, and University Lecturer,
Cambridge. *Sunnyside, Sidcup, Kent.*
- 1899 Lefevre, Right Hon. George John Shaw, M.A. 18 *Bryanston*
Square, W., and Abbotsworthy House, Kingsworthy, Winchester.
- 1898 Lindley, Right Hon. Nathaniel, Lord. 19 *Craven Hill Gardens, W.,*
Athenæum Club, S.W.; and The Lodge, East Carlton,
Norwich.
- 1898 Lister, Arthur, F.L.S. *Leytonstone, Essex.*
- 1860 Lister, Right Hon Joseph, Lord, O.M.—**Past President**—B.A. and 1881-83
M.B. (Lond.) F.R.C.S. D.C.L. (Oxon.) Hon. M.D. (Dubl. Würzburg, 1893-1901
Bologna, Buda Pest, Vienna) LL.D. (Camb. Edin. Glasg. Toronto
and Univ. McGill) D.Sc. (Vict.) Emeritus Professor of Clinical
Surgery, King's College, London, Serjeant-Surgeon in Ordinary **For. Sec.**
to the King. Knt. Grand Cross Ord. Danebrog; Knt. Pruss. 1893-95
Ord. "Pour le Mérite"; Assoc. Étrang. Inst. Fr. (Acad. Sci.); **Pres.**
Hon. Mem. R.I.A.; Hon. Mem. Asiat. Soc. Bengal, Amer. Acad. 1895-1900
Arts and Sci., and Acad. Imp. Milit de Méd., St. Petersburg. **V.P.**
Medals: Copley, Royal. 12 *Park Crescent, Portland Place, W.* 1900-01
- 1900 Lister, Joseph Jackson, M.A. F.Z.S. *St. John's College, Cambridge.*
- 1879 Liveing, George Downing, M.A. Sc.D. (Dubl.) Professor of Chemistry 1891-92
in the University of Cambridge; Fellow of St. John's College, 1902-
Cambridge. **Medal: Davy.** *Newnham, Cambridge.* **V.P.**
1891-92
- 1882 Liversidge, Archibald, M.A. (Camb.) LL.D. (Glasg.) Assoc. R.S.M.;
Hon. F.R.S.E. F.C.S. F.I.C. F.G.S. F.R.G.S., Memb. Phil. Soc.
Camb., Phys. Soc. Lond., Min. Soc. Gr. Brit., Min. Soc. Fr.; Hon.
Mem. Roy. Soc. Vict., New Zeal. Inst., Roy. Histor. Soc., K. Leop.
Carol. Acad. Halle; Corr. Mem. New York Acad. Sci., Senck.
Naturf. Gesell. Frankf., Roy. Soc. Tasm., Roy. Soc. Queensland,
Soc. d'Acclimat. Maur., Edin. Geol. Soc. Professor of Chemistry
in the University of Sydney. *St. Mark's Road, Darling Point,*
Sydney, New South Wales.
- 1869 Lockyer, Sir J. Norman, K.C.B. Memb. Phys. Soc. Lond., Ord. Imp. 1874-76
Bras. Rossæ. Eq. Inst. Fr. (Acad. Sci.), Soc. pro fov. Indust. Nat. 1885-87
Par., Soc. Reg. Sci. Gött., Frank. Inst. Philad., Soc. Phys., Soc. 1891-93
Reg. Med. Brux., Soc. Spettros. Ital., Reg. Sci. Panorm. et Hist. **V.P.**
Nat. Genev. Mem. Corr.; Acad. Reg. Linc. Romæ. et Soc. Phil. 1892-93
Amer. Philad. Socius.; Soc. Lit. et Phil. Manc., Acad. Gioen.
Sci. Nat. Catan., Soc. Phil. Ebor. et Univ. Lehigh Soc. Honor.
Medal: Rumford. 16 *Penywern Road, S.W.; and Solar*
Physics Observatory, South Kensington, S.W.

Date of
Election

Service on
Council, &c.

- 1887 Lodge, Sir Oliver Joseph. D.Sc. (Oxon. Lond.) LL.D. (Glasg. St. And.) 1893-94
M. Inst. E.E. Principal of the University of Birmingham;
Corr. Mem. Amer. Phil. Soc. Philad., Accad. Sci. dell' Istituto
Bologna, Bataafsch Genoots Rotterdam. **Medal: Rumford.**
Mariemont, Edgbaston, Birmingham.
- 1902 Long, Right Hon. Walter Hume. 11 *Ennismore Gardens*, S.W.
- 1894 Love, Augustus Edward Hough, M.A. D.Sc. Sedleian Professor of 1902-
Natural Philosophy in the University of Oxford. 34 *St. Mar-*
garet's Road, Oxford.
- 1894 Lydekker, Richard, B.A. (Camb.). *The Lodge, Harpenden, Herts.*
- 1881 Macalister, Alexander, M.A. M.D. (Dubl. & Camb.) Sc.D. (Dubl.) 1894-95
LL.D. (Glasg. and Univ. McGill) Professor of Anatomy in the
University of Cambridge. *Torridale, Cambridge.*
- 1895 McClean, Frank, M.A., LL.D. (Glasg.) F.R.A.S., M. Inst. C.E.
Athenæum Club, S.W.; and Rushall House, Tunbridge Wells.
- 1865 McClintock, Sir Francis Leopold, Admiral, K.C.B. D.C.L. LL.D.
16 *Queensberry Place, Cromwell Road, S.W.*
- 1901 Macdonald, Hector Munro, M.A. Fellow of Clare College, Cambridge,
and University Lecturer in Mathematics. *Clare College, Cam-*
bridge.
- 1859 Macdonald, Sir John Denis, K.C.B. M.D. Inspector-General of Hospitals
and Fleets R.N. *Amwell Place, Hassocks, Sussex.*
- 1888 Macdonald, Right Hon. Sir John Hay Athole, K.C.B. LL.D. F.R.S.E.
M.I.E.E. Lord Justice-Clerk of Scotland, and Lord President of
the Second Division of the Court of Session. 15 *Abercromby*
Place, Edinburgh.
- 1895 Macewen, Sir William, M.D. (Glasg.) Hon. LL.D. (Glasg.) Hon.
F.R.C.S. Professor of Surgery in the University of Glasgow.
3 *Woodside Crescent, Glasgow.*
- 1900 MacGregor, James Gordon, D.Sc. (Lond.) LL.D. (Glasg. and Dalh.)
Professor of Natural Philosophy in the University of Edinburgh.
The University, Edinburgh.
- 1877 McIntosh, William Carmichael, M.D. (Edin.) LL.D. (St. And.) F.L.S. 1900-01
F.R.S.E. L.R.C.S.E. C.M.Z.S. Professor of Natural History in the
University of St. Andrews; Director of the University Museum,
and of the Gatty Marine Laboratory, St. Andrews; V.P. Lit. and
Antiq. Soc. Perth; Hon. Mem. Roy. Zool. Soc. Ireland, and Nat.
Hist. Soc. Glasgow; Hon. Fell. Scot. Nat. Hist. Soc.; Hon. Mem.
Psychol. Soc. Paris, and Soc. Centrale d'Aquicult. de France.
Medal: Royal. 2 *Abbotsford Crescent, St. Andrews, Scotland;*
and Nevay Park, Meikle, Perthshire.
- 1884 McKendrick, John Gray, M.D. LL.D. F.R.S.E. F.R.C.P.E. Professor 1892-93
of Physiology in the University of Glasgow. *University, Glasgow.*
- 1877 McLachlan, Robert, F.L.S. F.Z.S. F.E.S. Soc. Imp. Ami. Sci. Nat.
Mosq., Inst. Nov. Zel., Soc. pro Faun. et Flo. Fenn., Soc. Entom.
Batav., Soc. Entom. Belg., Soc. Entom. Helvet., Soc. Nat. Hist.
Glasg. Soc. Honor.; Soc. Reg. Sci. Leodium, Soc. Nat. Hist.
Bost. Corresp. *Westview, 23 Clarendon Road, Lewisham, S.E.*

Date of
ElectionService on
Council, &c.

- 1881 M^cLeod, Herbert, F.I.C. V.P.C.S. Late Professor of Chemistry in the Royal Indian Engineering College, Cooper's Hill. 9 *Coverdale, Richmond, Surrey.* 1887-89
- 1898 M^cMahon, Charles Alexander, Lieut.-General, F.G.S. 20 *Nevern Square, South Kensington, S.W.*
- 1890 MacMahon, Percy Alexander, Major, R.A. (retired) D.Sc. (Dubl.) F.R.A.S. Hon. Mem. C.P.S. Medal: Royal. Queen Anne's Mansions, Westminster, S.W. 1895-97
- 1877 Mallet, John William, Ph.D. (Gött.) M.D. LL.D. F.C.S. Mem. of the Chem. Socs. of Paris, Berlin, and New York, and of the Amer. Phil. Soc. Philad.; Assoc. Fellow of the Amer. Acad. of Arts and Sciences, Boston; Fellow of the Coll. Phys. Philad. and Hon. Fellow of the Med. Chir. Faculty of Maryland. *University of Virginia, Albemarle Co., Virginia, United States.*
- 1901 Mansergh, James, Past Pres. Inst. C.E. 51 *Fitzjohn's Avenue, N.W.*
- 1900 Manson, Patrick, C.M.G. M.D. (Aberd.) LL.D. (Aberd.) F.R.C.P. Physician and Medical Adviser to the Colonial Office; Lecturer on Tropical Medicine to St. George's Hospital, Charing Cross Hospital, and London School of Tropical Medicine. 21 *Queen Anne Street, Cavendish Square, W.*
- 1873 Markham, Sir Clements Robert, K.C.B. P.R.G.S. F.S.A. Acad. Caes. Nat. Cur. Socius; Soc. Geog. Par., Berol., Vindob., Hist. Philad. et Univ. Chil. Soc. Honor. *Athenæum Club; and 21 Eccleston Square, S.W.*
- 1891 Marr, John Edward, M.A. F.G.S. Fellow and Lecturer of St. John's College, Cambridge, and University Lecturer in Geology. *St. John's College, Cambridge.*
- 1901 Martin, Charles James, M.D. D.Sc. (Lond.) Professor of Physiology in the University of Melbourne. *The University, Melbourne, Victoria.*
- 1895 Martin, Sidney, M.D. B.S. B.Sc. F.R.C.P. Physician to University College Hospital; Professor of Pathology, University College, London. 10 *Mansfield Street, Cavendish Square, W.*
- 1870 Maskelyne, Nevil Story, M.A. F.G.S. Late Professor of Mineralogy in the University of Oxford; Hon. Fellow Wadham Coll. Oxon; Soc. Reg. Geol. Cornub., Soc. Imp. Min. Petrop. et Soc. Hist. Nat. Bost. Soc.; Acad. Reg. Bavar. Monach. Soc. Cor. *Basset Down House, Swindon.* 1873-75 97-99 V.P. 1897-99
- 1870 Masters, Maxwell Tylden, M.D. M.R.C.S. F.L.S. Ord. Leopold Officer; Inst. Fr. (Acad. Sci.), Acad. Sci. Nat. Philad., Soc. Reg. Liège et Soc. Sci. Nat. Cherbourg Soc. Corr. *Mount Avenue, Ealing, W.*
- 1902 Mather, Thomas. 26 *Sumatra Road, West Hampstead, N.W.*
- 1897 Mathews, George Ballard, M.A. Fellow of University College, London. Late Professor of Mathematics in the University College of North Wales. *St. John's College, Cambridge.*
- 1879 Matthey, George, F.C.S. Assoc. Inst. C.E. Leg. Honor. (France), Ord. Franz Josef (Austria), Great Gold Medal for Arts and Science (Germany). *Cheyne House, Chelsea Embankment, S.W.*
- 1898 Maxwell, Right Hon. Sir Herbert Eustace, Bart. LL.D. F.S.A. Pres. Soc. Scott. Antiq. 49 *Lennox Gardens, S.W.; and Monreith, Whauphill, Wigtownshire, N.B.*

- 1877 Medlicott, Henry Benedict, M.A. (Dubl.) F.G.S. Late Director (1876-87) of the Geol. Survey of India. 43 *St. John's Road, Clifton, Bristol.*
- 1886 Meldola, Raphael, For. Sec. C.S. F.I.C. F.R.A.S. F.E.S. Professor of Chemistry in the Finsbury Technical College, City and Guilds of London Institute. 6 *Brunswick Square, W.C.* 1896-98
- 1892 Miall, Louis Compton, Professor of Biology in the Yorkshire College, Leeds. 8 *Spring Road, Headingley, Leeds.*
- 1902 Michell, John Henry, M.A. Assistant Professor of Mathematics in the University of Melbourne. *The University, Melbourne.*
- 1896 Miers, Henry Alexander, D.Sc. M.A. (Oxon.) F.G.S. V.P.C.S. V.P. Min. Soc. Waynflete Professor of Mineralogy in the University of Oxford. *Magdalen College, Oxford.* 1901-
- 1874 Mills, Edmund James, Hon. LL.D. (Glasg.) D.Sc. Lond. F.C.S. F.I.C. Corr. Mem. Roy. Phil. Soc. Glasg. Emeritus Professor of Technical Chemistry in the Glasgow and West of Scotland Technical College, Glasgow. 11 *Greenhill Road, Harrow.*
- 1887 Milne, John, F.G.S. Assoc. and Hon. Fellow of King's College, London. Late Professor of Mining and Geology in the Imperial College of Engineering, Japan. *Shide Hill House, Shide, Newport, Isle of Wight.*
- 1895 Minchin, George M., M.A. (Dubl.) Professor of Mathematics in the Royal Indian Engineering College, Cooper's Hill. *The College, Cooper's Hill, Staines.*
- 1871 Moncrieff, Sir Alexander, Colonel (late R.A.), K.C.B. *Bandirran, Perthshire, N.B.*; 15 *Vicarage Gate, Kensington, W.*; and *Athenæum Club, S.W.*
- 1891 Mond, Ludwig, Ph.D. F.I.C. F.C.S. *The Poplars, 20 Avenue Road, Regent's Park, N.W.*; *Athenæum Club, S.W.*; and *Winnington Hall, Northwich.* 1900-01
- 1899 Morgan, Conwy Lloyd, A.R.S.M. F.G.S. Principal and Professor of Psychology in University College, Bristol. Corr. Acad. Sci. New York and Philad. 16 *Camyngs Road, Clifton, Bristol.*
- 1892 Morley, Right Hon. John, O.M. M.A. D.C.L. (Oxon.) Hon. LL.D. (Camb. and Glasg.) Trust. Brit. Mus. 95 *Elm Park Gardens; and Athenæum Club, S.W.*
- 1896 Mott, Frederick Walker, M.D. (Lond.) F.R.C.P. *Pathological Laboratory, Claybury Asylum, Essex*; and 25 *Nottingham Place, W.*
- 1880 Moulton, John Fletcher, M.A. K.C. 57 *Onslow Square, S.W.*
- 1900 Muir, Thomas, C.M.G. M.A. LL.D. F.R.S.E. Superintendent-General of Education in Cape Colony. *Department of Public Education, Cape Town, South Africa.*
- 1866 Müller, Hugo, Ph.D. LL.D. (St. And.) V.P.C.S. Ord. SS^{rum} Lazar. et Maur. Eq. 13 *Park Square East, N.W.*; *Crosby Hill, Camberley, Surrey*; and *Athenæum Club, S.W.* 1893-85
- 1897 Murray, George Robert Milne, F.L.S. F.R.S.E. Corr. Mem. New York Acad. Sci., Keeper of the Botanical Department, British Museum. *Natural History Museum Cromwell Road, S.W.*; and *Willow House, The Green, Ealing W.* 89-91

Date of
ElectionService on
Council, &c.

- 1896 Murray, Sir John, K.C.B. Knt. Pruss. Ord. "*Pour le Mérite*"; LL.D. (Edin. and Toronto); Sc.D. (Camb.); Ph.D. (Jena); F.L.S. F.R.G.S. F.R.S.E. P.R.S.G.S. P.S.N.H.S. F.R.P.S.E. F.S. Micros. S. F.S. Met. S. F.S.A. Scot.; Hon. Memb. Geo. für Erdk. Berlin, Ges. Naturf. Freunde Berlin, Schweiz. Naturf. Ges., Senckenburg Naturf. Ges., Nat. Geogr. Soc. Washington, Lit. and Phil. Soc. Manch., Konink. Nederl. Aardrijkskundig. Genoots. Amsterdam, Nederl. Dierkundige Vereenig., Imp. Soc. Students of Nat. Hist. Anthropol. and Ethnol. Moscow, Soc. Zool. France, Geol. Soc. Edin., Nat. Hist. Soc. Glasgow, Geogr. Ges. Bern. Soc., Geogr. Ital. Rome; Corresp. Memb. Boston Soc. Nat. Hist., Russ. Imp. Acad. Sci., Russ. Imp. Soc. Geogr., Zool. Soc. London; For. Corresp. Memb. Soc. Géog. Paris; For. Hon. Memb. Amer. Acad. Arts and Sciences; Assoc. Acad. Roy. Sci. Lettres et Beaux-Arts, Belgique. **Medal: Royal.** *Challenger Lodge, Wardie, Edinburgh.*
- 1875 Nares, Sir George Strong, K.C.B. Vice-Admiral, 11 *Claremont Road, Surbiton.*
- 1897 Neville, Francis Henry, M.A. Fellow and Lecturer in Natural Science, Sidney College. *Sidney College, Cambridge; and 15 Parkside, Cambridge.*
- 1902 Newall, Hugh Frank, M.A. (Camb.) F.R.A.S. *Cambridge Observatory; and Madingley Rise, Cambridge.*
- 1870 Newton, Alfred, M.A. F.L.S. F.Z.S. V.P. Marine Biol. Assoc. Professor of Zoology and Comparative Anatomy in the University of Cambridge. **Medal: Royal.** *Magdalene College, Cambridge.* 1879-81 89-91 V.P. 1889-91
- 1893 Newton, Edwin Tully, F.G.S. F.Z.S. Hon. Mem. Norfolk Nat. Soc. *Geological Museum, Jermyn Street, S.W.*
- 1880 Niven, Charles, M.A. D.Sc. Professor of Natural Philosophy in the University, Aberdeen. 6 *Chanonry, Old Aberdeen.*
- 1882 Niven, William Davidson, C.B. M.A. LL.D. Director of Studies in the Royal Naval College, Greenwich. *Greenwich, S.E.* 1892-94
- 1870 Noble, Sir Andrew, Bart., Capt., K.C.B. D.C.L. (Dunelm.) F.R.A.S. F.C.S. Ord. Medjidie, Turkey, Grand Cordon, Ord. Coron. Ital. et Ord. Jes. Christ Portog. Ord. Imp. Bras. Rosae, Gr. Off. Ord. Thesau. Sacr. Japonia, Ord. Draco d. Sinen., Com. et Ord. Car. III. Hisp. Eq. **Medal: Royal.** *Jesmond Dene House, Newcastle-upon-Tyne; and Athenæum Club, S.W.* 1884-85 89-90 1898-1900 V.P. 1899-00
- 1890 Norman, Rev. Alfred Merle, M.A. D.C.L. Hon. LL.D. (St. And.) F.L.S. Hon. Canon of Durham. *The Red House, Berkhamsted, Herts.*
- 1900 North, Right Hon. Sir Ford. 76 *Queensborough Terrace, Hyde Park, W.; and Athenæum Club, S.W.*
- 1890 Northbrook, Thomas George Baring, Earl of, LL.D. D.C.L. G.C.S.I. 42 *Portman Square, W.; and Stratton, Micheldever Station, Hants.*

- 1900 Northumberland, Henry George Percy, Duke of, K.G. F.S.A. President of the Royal Institution. 2 Grosvenor Place, S.W.
- 1859 Odling, William, M.A. (Oxon.) M.B. (Lond.) Coll. Reg. Med. Socius. V.P.C.S. Hon. Math. Phys. Doct. (Lugd. Bat.) Waynflete Professor of Chemistry in the University of Oxford. Museum; and 15 Norham Gardens, Oxford. 1864-66
79-81
- 1863 Oliver, Daniel, LL.D. (Aberd.) F.L.S. Late Keeper of the Herbarium and Library, Royal Gardens, Kew; Emeritus Professor of Botany, University College, London. Medal: Royal. 10 Kew Gardens Road, Kew. 1875-76
80-82
- 1868 Ommanney, Sir Erasmus, Admiral, K.C.B. LL.D. (Univ. McGill) F.R.A.S. F.R.G.S. Cross of Grand Comm. of Royal Ord. of the Saviour, Greece. 29 Connaught Square, Hyde Park, W.; and United Service Club.
- 1855 Osler, Abraham Follett. South Bank, Edgbaston, Birmingham.
- 1898 Osler, William, M.D. F.R.C.P. Professor of Medicine in the Johns Hopkins University, and Physician-in-Chief to the Johns Hopkins Hospital, Baltimore. 1 West Franklin Street, Baltimore, Md., U.S.A.
- 1885 O'Sullivan, Cornelius, F.I.C. F.C.S. 148 High Street, Burton-on-Trent.
- 1882 Palgrave, Robert Harry Inglis, F.S.S. Belton near Great Yarmouth.
- 1898 Parsons, The Hon. Charles Algernon, M.A. M.Inst.C.E. Medal: Rumford. Holeyn Hall, Wylam-on-Tyne.
- 1863 Pavy, Frederick William, M.D. (Lond.) LL.D. (Glasg.) Coll. Reg. Med. Socius. Consulting Physician and formerly Lecturer on Physiology and Comparative Anatomy and Zoology, and on Medicine, at Guy's Hospital. 35 Grosvenor Street, W.
- 1892 Peach, Benjamin Neeve, F.R.S.E. F.G.S. Geological Survey Office, Sheriff Court Buildings, Edinburgh.
- 1836 Pearson, Karl, M.A. LL.B. Professor of Applied Mathematics and Mechanics in University College, London. Medal: Darwin. 7 Well Road, Hampstead, N.W.
- 1892 Pedler, Alexander, C.I.E. F.C.S. F.I.C. Fellow of the University of Calcutta; Director of Public Instruction with the Government of Bengal. 31-2 Judge's Court Road, Alipur, Calcutta.
- 1894 Penrose, Francis Cranmer, M.A. Litt.D. (Camb.) D.C.L. (Oxon.) F.R.A.S. F.S.A. Honorary Fellow of Magdalene College, Cambridge. Past. Pres. R.I.B.A.; Antiquary to the Royal Academy; Corr. Mem. Soc. Centrale Arch. Français; U.S.A. Inst. Arch.; Archælog. Soc. Berlin and Athens; Knight of the Order of the Saviour, Greece. Colebyfield, Copse Hill, Wimbledon, S.W.
- 1866 Perkin, William Henry, V.P.C.S. LL.D. (St. And.) Ph.D. Medals: Davy, Royal. The Chestnuts, Sudbury, Harrow. 1879-81
92-94

Date of
ElectionService on
Council, &c.

- 1890 Perkin, William Henry, junior, Ph.D. F.I.C. F.C.S. Professor of Organic Chemistry in Owens College, Manchester. *Fairview, Wilbraham Road, Fallowfield, Manchester.*
- 1885 Perry, John, D.Sc. LL.D. Professor of Mechanics and Mathematics in the Royal College of Science, London. *Royal College of Science, South Kensington, S.W.*
- 1902 Petrie, William Matthew Flinders, Hon. D.C.L. (Oxon.) Litt. D. (Camb.) LL.D. (Edin.) Professor of Egyptology, University College, London. *8 Well Road, Hampstead, N.W.*
- 1868 Pettigrew, James Bell, M.D. and F.R.C.P. (Edin.) LL.D. (Glas.) Chandos. Professor of Medicine and Anatomy, and late Dean of the Medical Faculty in the University of St. Andrews; Laureate Inst. Fr. *The Swallowgate, St. Andrews, N.B.*
- 1887 Pickard-Cambridge, Rev. Octavius, M.A. *Bloxworth, Wareham, Dorset.*
- 1890 Pickering, Spencer Percival Umfreville, M.A. F.C.S. F.I.C. Mem. Phys. Soc. Lond. *Harpenden, Herts; Woolacombe, N. Devon; and 60 Palace Court, W.*
- 1889 Pirbright, Right Hon. Henry de Worms, Baron. *42 Grosvenor Place, S.W.; Henley Park, Guildford.*
- 1902 Plunkett, Right. Hon. Horace Curzon. *104 Mount Street, W.*
- 1902 Pope, William Jackson, F.C.G.I., F.C.S., F.I.C., Professor of Chemistry in the Municipal School of Technology, Manchester. *7 Albion Road, Fallowfield, Manchester.*
- 1889 Poulton, Edward Bagnall, M.A. D.Sc. (Oxon.) Hon. LL.D. (Princeton) F.L.S. F.Z.S. F.G.S. Fellow of Jesus College, and Hope Professor of Zoology in the University of Oxford. Corresp. Mem. Acad. Sci. New York, and Soc. Nat. Hist. Boston. *Wykeham House, Banbury Road, Oxford; and St. Helen's Cottage, St. Helen's, Isle of Wight.* 1897-99
- 1895 Power, William Henry, C.B., Medical Officer to H.M. Local Government Board. *Glenbrook, Greenhithe; and Local Government Board, Whitehall, S.W.*
- 1888 Poynting, John Henry, D.Sc. Professor of Physics in the University of Birmingham. *10 Ampton Road, Edgbaston, Birmingham.* 1894-96
- 1881 Preece, Sir William Henry, K.C.B. Fellow of King's College, London; Past. Pres. Inst. Electr. Eng; Past Pres. Inst. C.E.; Hon. Mem. Inst. E.E. (America); Officier Lég. Hon. France. *Gothic Lodge, Wimbledon; Penrhos, Carnarvon; and Athenæum Club, S.W.* 1887-89
- 1895 Purdie, Thomas, B.Sc. Ph.D. Hon. LL.D. (Aberd.) A.R.S.M. Professor of Chemistry in the University of St. Andrews. *The University, St. Andrews.*
- 1886 Pye-Smith, Philip Henry, M.D. B.A. F.R.C.P. Consulting Physician to Guy's Hospital; Fellow of the University of London. *48 Brook Street, W.; and Athenæum Club.* 1891-92
- 1900 Rambaut, Arthur Alcock, M.A. (Dubl. et Oxon.) Sc.D. (Dubl.) F.R.A.S. Radcliffe Observer. *Radcliffe Observatory, Oxford.*

- 1898 Ramsay, Sir William, K.C.B. Ph.D. (Tüb.) Ph.D. (Cracow) LL.D. (Glasg.) 1896-97
Sc.D. (Dubl.) F.C.S. F.I.C. Professor of Chemistry in University
College, London; Officier of the Legion of Honour of France;
Corresp. Inst. Fr. (Acad. Sci.), R. Ist. Veneto, For. Mem. Acad.
der Wiss. Berlin, Soc. Holl. des Sci., Acad. Imp. Bohemia, R.
Accad. d. Sci. Turin, Genootschap v. Phys. Rotterdam; Hon.
Mem. Roy. Irish Acad. Amer. Phil. Soc., New York Acad. Sci.,
Lit. Phil. Soc., Manch., Pharmaceut. Soc., Soc. de Phys. et de
Sci. Nat. Genève, K. Svenska Vetensk. Akad., Kong. Danske
Videns. Selskab., Deutsch. Chem. Gesell. Berlin, Physikal. Verein,
Frankfort-on-Main, Acad. Roy. Roumania, Amer. Chem. Soc.
Medal: Davy. 12 *Arundel Gardens, Notting Hill, W.*
- 1870 Ransom, William Henry, M.D. Coll. Reg. Med. Soc. Consulting
Physician to the General Hospital, Nottingham. *The Pavement,
Nottingham.*
- 1884 Ransome, Arthur, M.A. M.D. F.R.C.P. Late Professor of Public
Health in Owens College, and Examiner in Sanitary Science in
Cambridge and Victoria Universities. Hon. Fell. of Caius Coll.,
Cambridge. *Sunnyhurst, Dean Park, Bournemouth.*
- 1873 Rayleigh, John William Strutt, Lord, O.M. M.A. D.C.L. (Oxon.) 1877-79
Sc.D. (Camb. and Dubl.) LL.D. (Edin. Glasg. Toronto, and Univ.
McGill) Ph.D. (Heidel.) Hon. Fellow of Trinity College, Cam-
bridge; Officier of the Legion of Honour of France; Hon. Mem.
Inst. C.E. F.R.A.S.; Soc. Reg. Edin., Acad. Reg. Hib., Soc. Lit.
et Phil. Manc., Acad. Reg. Sci. Monach., Soc. Asiat. Beng., Soc.
Honor.; Inst. Fr. (Acad. Sci.) Par. Corresp.; Acad. Reg. Sci.
Hafn., Soc. Reg. Sci. Gött., Acad. Sci. Berol., Acad. Imp. Sci.
Petropol. Corr. Soc.; Scientific Adviser to the Trinity House;
Professor of Natural Philosophy in the Royal Institution.
Medals: Copley, Royal. *Terling Place, Witham, Essex.*
- 1876 Reed, Sir Edward James, K.C.B. *Broadway Chambers, West-
minster, S.W.*
- 1899 Reid, Clement, F.G.S. F.L.S. Geological Museum, 28 *Jermyn
Street, S.W.*
- 1898 Reid, Edward Waymouth, B.A. M.B. (Camb.) Professor of Physiology
in University College, Dundee; St. Andrews University. *Uni-
versity College, Dundee.*
- 1883 Reinold, Arnold William, M.A. Professor of Physics in the Royal Naval 1899-101
College, Greenwich. 9 *Vanbrugh Park Road, Blackheath, S.E.*
- 1880 Reynolds, J. Emerson, M.D. Sc.D. (Dubl.) Pres. C.S. Professor of 1900-2
Chemistry, University of Dublin. *Burleigh House, Burlington* **V.P.**
Road, Dublin. 1901-2
- 1877 Reynolds, Osborne, M.A. (Cantab.) LL.D. (Glasg.), Mem. Inst. C.E. 1882-84
Hon. Fellow Queen's Coll. Camb.; Professor of Engineering in
Owens College, Victoria University, Manchester. **Medal: Royal.**
19 *Lady Barn Road, Fallowfield, Manchester.*

- 1842 Riddell, Charles James Buchanan, Major-Gen. C.B. *Oaklands, Chudleigh, Devonshire.*
- 1885 Ringer, Sydney, M.D. (Lond.) 15 *Cavendish Place, W.*
- 1860 Ripon, George Frederick Samuel Robinson, Marquis of, K.G. G.C.S.I. C.I.E. D.C.L. (Oxon.) F.L.S. F.R.G.S. 9 *Chelsea Embankment, S.W.*; and *Studley Royal, Ripon, Yorkshire.*
- 1890 Roberts, Isaac, Sc.D. (Dubl.) F.R.A.S. F.G.S. *Starfield, Crowborough, Sussex.*
- 1878 Roberts, Samuel, M.A. (Lond.) 27 *Nassington Road, Hampstead, N.W.*
- 1899 Romer, Right Hon. Sir Robert, G.C.B. M.A., Lord Justice of Appeal. 27 *Harrington Gardens, South Kensington*; and *Athenæum Club, S.W.*
- 1863 Roscoe, Sir Henry Enfield, Knt., B.A. D.C.L. (Oxon.) LL.D. (Cantab. 1872-73
Dubl. Glasg. Montr.) Hon. M.D. (Heidelb.) Hon. D.Sc. 81-83
(Vict.) Ph.D. V.P.C.S. Officier Lég. Hon. France; Corresp. Inst. 83-90
Fr. (Acad. Sci.); Vice-Chancellor and Fellow of Univ. of Lond., V.P.
Fellow of Univ. Coll., and Eton College; Emeritus Professor of 1881-82
Chemistry in Victoria University (Owens College); Hon. Mem. 88-90
Literary and Phil. Soc. Manchester; Hon. Mem. New York Acad.
Sci., Chem. Gesell. Berlin, Verein für Naturwiss. Brunswick, and
Physikal. Verein. Frankfort-on-Main; Corresp. K. Bayer. Akad.
Wiss. Munich, K. Gesell. Wiss. Göttingen, and Acad. Gioenia
Sci. Nat. Catania; Mem. K. Leop.-Carol. Akad. Halle, and
Physiogr. Sällsk. Lund. **Medal: Royal.** 10 *Bramham Gardens,*
South Kensington, S.W.; and *Athenæum Club.*
- 1886 Rosebery, Right Hon. Archibald Philip Primrose, Earl of, K.G. K.T. D.C.L. Trust. Brit. Mus. 38 *Berkeley Square, W.*; and *Dalmeny Park, Linlithgowshire.*
- 1901 Ross, Ronald, Major (I.M.S. retired), C.B. F.R.C.S. D.P.H. (United Colleges, Lond.). Professor of Tropical Medicine and Parasitology, University College, Liverpool. *University College, Liverpool.*
- 1867 Rosse, Laurence Parsons, Earl of, K.P. B.A. D.C.L. (Oxon.) LL.D. 1871-72
(Camb. and Dubl.) F.R.A.S. Chancellor of the University of 87-88
Dublin. *Birr Castle, Parsonstown, Ireland.* V.P.
1871-72
87-88
- 1872 Routh, Edward John, D.Sc. (Cantab. et Dubl.) LL.D. (Glasg.) M.A. 1883-90
(Lond.) Fellow of the University of London; Hon. Fellow St.
Peter's College, Cambridge; F.R.A.S. F.G.S. *Newnham Cottage,*
Queen's Road, Cambridge.
- 1884 Rücker, Sir Arthur William, M.A. (Oxon.) D.Sc. (Vict.) LL.D. (Glasg.), 1887-89
Hon. Fellow of Brasenose Coll., Oxford; Principal and Fellow of 1894-1901
the University of London; Corr. Mem. Leeds Lit. and Phil. Soc.; Sec.
Hon. Mem. Royal Cornwall Polytechnic Society. **Medal: Royal.** 1896-1901
19 *Gledhow Gardens, South Kensington, S.W.*; and *Athenæum Club, S.W.*
- 1886 Russett, Henry Chamberlaine, C.M.G. B.A. (Sydn.) F.R.A.S. F.R. Met. Soc. Government Astronomer of New South Wales. *The Observatory, Sydney, N.S. Wales,*

Fellows of the Royal Society.

31

Date of Election.		Service on Council, &c.
1872	Russell, William James, Ph.D. V.P.C.S., late Lecturer on Chemistry at the Medical School of St. Bartholomew's Hospital. 34 Upper Hamilton Terrace, N.W.	1885-86 97-99 V.P. 1897-99
1869	Salisbury, The Most Hon. Robert Arthur Talbot Gascoigne- Cecil Marquis of, K.G. M.A. D.C.L. (Oxon.) Chancellor of the University of Oxford. 20 Arlington Street, S.W.; and Hatfield House, Hatfield, Herts.	1869-70 82-83 92-94 V.P. 1882-83 93-94
1863	Salmon, Rev. George, D.D. (Dubl. et Edin.) D.C.L. (Oxon.) LL.D. (Cantab.) Provost of Trin. Coll. Dubl., Inst. Fr. (Acad. Sci.) Paris, Acad. Reg. Sci. Berol., Soc. Reg. Sci. Gött. Corresp.; Soc. Reg. Sci. Hafn. Soc. Extr. Medals: Copley, Royal. Trinity College, Dublin.	
1881	Samuelson, Right Hon. Sir Bernhard, Bart., Mem. Inst. C.E. 56 Prince's Gate, S.W.	1887-88
1867	Sanderson, Sir J. S. Burdon, Bart., M.A. (Oxon.) M.D. LL.D. Sc.D. (Dubl.) LL.D. (Edin.) D.C.L. (Dunelm.) F.R.S.E. F.R.C.P. Regius Professor of Medicine in the University of Oxford; Hon. Fellow of Magdalen College; Corr. Mem. K. Preuss. Akad. Wiss. Berl.; Inst. Fr. (Acad. Sci.) Medal: Royal. 64 Banbury Road, Oxford.	1873-75 84-86 93-95 V.P. 1874-75 94-95
1902	Saunders, Edward, F.L.S. F.E.S. <i>St. Ann's, Mount Hermon, Woking.</i>	
1878	Schäfer, Edward Albert, M.B.C.S. LL.D. (Aberd.) Professor of Physiology in the University of Edinburgh. Medal: Royal. North Berwick.	1890-92 1902-
1901	Schlich, William, C.I.E. Ph.D. F.L.S. Principal Professor of Forestry in the Royal Indian Engineering College, Cooper's Hill. <i>Englefield Green, Surrey.</i>	
1850	Schunck, Edward, F.C.S. D.Sc. Medal: Davy. <i>Kersal, Manchester.</i>	
1879	Schuster, Arthur, Ph.D. F.R.A.S. Mem. Inst. Elect. Eng., Phil. Soc. Camb., Roy. Phil. Soc. Glasg., Corr. Mem. Roy. Soc. Sci. Gött., Professor of Physics in Owens College, Victoria University, Manchester. Medal: Royal. <i>Kent House, Victoria Park, Manchester.</i>	1885-87 98-99
1861	Sclater, Philip Lutley, M.A. D.Sc. (Oxon.) Ph.D. (Bonn) Hon. Fellow of Corpus Christi College, F.L.S. F.G.S. F.R.G.S., late Secretary of the Zoological Society of London. 3 Hanover Square, W.; and Odiham Priory, Winchfield, Hants.	1872-73 86-87
1898	Scott, Alexander, M.A. (Camb.) D.Sc. (Edin.) F.R.S.E. Sec. C.S. <i>Davy-Faraday Laboratory, Albemarle Street, W.</i>	
1894	Scott, Dukinfield Henry, M.A. (Oxon.) Ph.D. (Würzb.) F.L.S. F.G.S. Honorary Keeper of the Jodrell Laboratory, Royal Botanic Gardens, Kew. <i>Old Palace, Richmond, Surrey.</i>	1897-99
1870	Scott, Robert Henry, M.A. D.Sc. (Dubl.) F.Z.S. F.R. Met. Soc., late Secretary to the Meteorological Council. Officer of the Legion of Honour; Or.l. Coron. Ferr. Austr. Eq.; Acad. Cæs. Leop. Scs.;	1900-2

- Soc. Met. Fr. Par., Soc. Imp. Reg. Zool. Bot., Soc. Met. Austr. Vindob., Soc. Met. Germ. Berol. et Soc. Nat. Scrutat. Emb. Soc. Honor.; Inst. Geol. Imp. Vindob. Soc. Met. Ital. Taurin. et Soc. Isis Dresd. Mem. Corr. 6 *Elm Park Gardens S.W.*
- 1806 Sedgwick, Adam, M.A. Fellow, Tutor, and Lecturer of Trin. Coll., Cambridge, and Reader of Animal Morphology in the University. 4 *Cranmer Road, Cambridge.* 1892-94
- 1870 Seeley, Harry Govier, F.L.S. F.G.S. F.Z.S. F.R.G.S. Professor of Geology and Geography with Mineralogy in King's College, London; Lecturer on Geology and Mineralogy in the Royal Indian Engineering College, Cooper's Hill; Inst. Imp. Reg. Geol. Vindob. et Acad. Sci. Nat. Philad. Corresp.; Soc. Phil. Ebor., Soc. Imp. Sci. Nat. Hist. Mosq. Soc., Senckenberg. Natur. Gesell. Franf. Corresp. Hon. Mem. S. African Phil. Soc. 25 *Palace Gardens Terrace, Kensington, W.*
- 1900 Sell, William James, M.A. Senior Demonstrator of Chemistry in the University of Cambridge. 11 *Downing Grove, Cambridge.*
- 1874 Selwyn, Alfred Richard Cecil, C.M.G. F.G.S., late Director of the Geological Survey of Canada. *Robson Street, Vancouver, B.C., Canada.*
- 1898 Seward, Albert Charles, M.A. (Camb.) F.G.S. F.L.S. Fellow of Emmanuel College; late Fellow of St. John's College; University Lecturer in Botany, Cambridge. *Westfield, Huntingdon Road, Cambridge.*
- 1890 Sharp, David, M.B. C.M. (Edin.) Hon. M.A. (Camb.) F.L.S. F.Z.S. Hon. Mem. New Zealand Inst. *Museum of Zoology, Cambridge; and Hawthorndene, Hills Road, Cambridge.*
- 1891 Shaw, William Napier, M.A. Sc.D. Fellow of Emmanuel College, Cambridge; Secretary to the Meteorological Council. *Meteorological Office, 63 Victoria Street; and 10 Moreton Gardens, South Kensington, S.W.*
- 1898 Shenstone, William Ashwell, F.I.C. *Clifton College, Bristol; and Tuffleigh, St. Vincent's Rocks, Clifton, Bristol.*
- 1893 Sherrington, Charles Scott, M.A. M.D. (Camb.) Holt Professor of Physiology in University College, Liverpool; Memb. Corr. Honor. Soc. Neurol. Paris. 16 *Grove Park, Liverpool.* 1900-2
- 1845 Simon, Sir John, K.C.B. F.R.C.S. D.C.L. (Oxon.) LL.D. (Cantab. et Edin.) M.D. (Dubl.) M.Chir.D. (Munich), Consulting Surgeon to St. Thomas's Hospital. Medal: Buchanan. 40 *Kensington Square, W.* 1869-70
78-80
V.P.
1879-80
- Smith (*see* Jervis-Smith).
- 1901 Smithells, Arthur, B.Sc. (Lond.) F.I.C. Professor of Chemistry in the Yorkshire College, Leeds. *Wood Royd, Ben Rhydding, near Leeds.*
- 1887 Snelus, George James, A.R.S.M. Mem. Inst. M.E. Vice-Pres. Iron and Steel Inst. *Ennerdale Hall, Frizington, Cumberland.*

Date of
Election

Service on
Council, &c.

- 1889 Sollas, William Johnson, D.Sc. (Camb.) LL.D. (Dubl.) F.R.S.E. F.G.S.
Professor of Geology in the University of Oxford; Fellow of
University College, Oxford. 173 *Woodstock Road, Oxford.*
- 1857 Sorby, Henry Clifton, LL.D. (Cantab.) F.L.S. F.G.S. F.Z.S. F.S.A. 1876-77
F.R.M.S., Soc. Min. Petrop., Soc. Holland. Harl. Socius.; Acad.
Lync. Romæ. Adsoc. Extr.; Amer. Acad. Arts et Sci. Soc. Honor.;
Acad. Sci. Nat. Philad. et Acad. Sci. Nov. Ebor. Corr. Mem.
Medal: Royal. *Broomfield, Sheffield.*
- 1930 Spencer, W. Baldwin, B.A. (Oxon.) M.A. (Melb.). Professor of
Biology in the University of Melbourne; Fellow of Lincoln
College, Oxford; Corr. Mem. Z.S. *The University, Melbourne,*
Victoria.
- 1878 Sprengel, Hermann Johann Philipp, Ph.D. (Heidelb.) F.C.S. Royal
Prussian Professor (titular). *Savile Club, 107 Piccadilly, W.*
- 1899 Starling, Ernest Henry, M.D. F.R.C.P. Jodrell Professor of
Physiology in University College, London. 8 *Park Square*
West, Regent's Park, N.W.
- 1896 Stebbing, Rev. Thomas Roscoe Rede, M.A. (Oxon.) B.A. (Lond.)
F.L.S. F.Z.S., Fellow of King's Coll., London. *Ephraim Lodge,*
The Common, Tunbridge Wells.
- 1896 Stewart, Charles, LL.D. (Aberd.) M.R.C.S. F.L.S. Conservator of the
Museum of the Royal College of Surgeons, and Hunterian Pro-
fessor of Human and Comparative Anatomy. 39 *Lincoln's Inn*
Fields, W.C.
- 1893 Stirling, Edward Charles, C.M.G. M.A. M.D. (Camb.) F.R.C.S. C.M.Z.S.
Late Surgeon, Adelaide Hospital; Professor of Physiology in
the University of Adelaide; Director of the South Australian
Museum. *The University, Adelaide, South Australia.*
- 1902 Stirling, Right Hon. Sir James. 3 *Hans Crescent, S.W.; and*
Finchcocks, Goudhurst.
- 1851 Stokes, Sir George Gabriel, Bart.—**Past President**—M.A. D.C.L. 1853-92
(Oxon.) LL.D. (Dubl. Edin. et Cant.) D.Sc. Lucasian Professor of
Mathematics in the University of Cambridge; F.O.P.S. F.R.S.E.; 1854-85
Hon. Memb. Inst. C.E.; Soc. Reg. Hib., Lit. et Phil. Manc. et
Med. Chi. Lond. Soc. Honor.: Ord. Boruss. "*Pour le Mérite*"
Eq.: Acad. Sci. Berol. Soc. Acad. imp. Sci. Vindob., Soc. Imp. 1885-90
Nat. Sci. Mosquen. Soc. Honor.; Inst. Fr. (Acad. Sci.) Par., Reg.
Taurin. Acad.; Soc. Reg. Sci. Gött. Corresp.; Soc. Gall. Phys.,
Reg. Sci. Upsal., Acad. Sci. Bavar. et Acad. Nov. Lync. Rom. Soc.
Extr.; Soc. Phil. Amer., Soc. Batav. Roterod., Soc. Ital. Sci. et
Acad. Sci. Reg. Boruss. Socius; Acad. Amer. Bost., Soc. Philos.
Glasc., Mach. Civ. Inst. et Soc. Asiat. Beng. Soc. Honor. **Medals:**
Copley, Rumford. *Lensfield, Cambridge; and Athenæum Club,*
S.W.
- 1881 Stoney, Bindon Blood, LL.D. M.Inst.C.E. M.R.I.A. M.I.N.A.
14 *Elgin Road, Dublin.*

Date of Election		Service on Council, &c.
1861	Stoney, George Johnstone, M.A. Sc.D. (Dubl.) F.R.A.S., Mem. Amer. Phil. Soc., Corresp. Mem. Acad. Sci. di Lettere ed Arti, Benevento. 30 <i>Ledbury Road, Notting Hill, W.</i>	1898-1901 V.P. 1899-1900
1854	Strachey, Sir Richard, Lieut.-General, R.E. G.C.S.I. LL.D. (Cantab.) F.G.S. F.L.S. Chairman of the Meteorological Council; Hon. Mem. Asiat. Soc. Bengal. Medal: Royal. 69 <i>Lancaster Gate, Hyde Park, W.</i>	1872-74 80-81 84-86 90-91 V.P. 1880-81 85-86
1888	Sudeley, Charles Douglas Richard Hanbury-Tracy, Lord. <i>Ormeley Lodge, Ham Common, Surrey.</i>	
1894	Swan, Joseph Wilson, D.Sc. M.A. (Durh.) F.C.S. F.I.C. Past President Inst. Elec. Eng. Vice-Pres. Senate Univ. Coll. Lond.; Vice-Pres. Lit. and Phil. Soc. Newcastle; Cor. Mem. Phil. Soc. Glasgow; Chev. de la Légion d'Honneur. 58 <i>Holland Park, W.</i>	1900-2
1899	Tanner, Henry William Lloyd, D.Sc. (Oxon.) F.R.A.S. A.R.S.M. Professor of Mathematics and Astronomy in the University College of South Wales and Monmouthshire. <i>University College, Cardiff.</i>	
1898	Taylor, Henry Martyn. Fellow of Trinity College, Cambridge. <i>The Yews, Queen's Road, Cambridge.</i>	
1886	Teale, Thomas Pridgin, M.A. F.R.C.S. 38 <i>Cookridge Street, Leeds.</i>	
1890	Teall, J. J. H., M.A. F.G.S. Director-General of the Geological Survey of the United Kingdom, and of the Museum of Practical Geology, London. 89 <i>Thurlow Park Road, West Dulwich, S.E.</i> ; <i>Geological Museum, Jermyn Street</i> ; and <i>Athenæum Club, S.W.</i>	1899-1901 V.P. 1900-01
1869	Tennant, James Francis, Lieut.-General, R.E. C.I.E. F.R.A.S. 11 <i>Clifton Gardens, Maida Hill, W.</i>	
1880	Thiselton-Dyer, Sir William Turner, K.C.M.G. C.I.E. M.A. (Oxon.) B.Sc. (Lond.) Ph.D. LL.D. (Glasg.) F.L.S. Director Royal Botanic Gardens, Kew; Botanical Adviser to H.M. Secretary of State for the Colonies; Hon. Student of Christ Church, Oxford; late Fellow Univ. of London; Hon. Fellow, King's Coll., Lond., Bot. Soc. Edin.; Hon. Mem. Roy. Bot. Soc. Lond., Pharm. Soc. Gt. Britain, Camb. Phil. Soc., Lit. Phil. Soc. Manchester, Soc. Néerland. d'Hort. et de Bot., New Zealand Institute, Roy. Soc. N.S.W., Dominico Agric. Soc.; Corresp. Acad. Sci. Philad., Boston Soc. Nat. Hist., Hort. Soc. Berlin and Massachusetts, Soc. Nat. Sci. et Math. de Cherb., and Botan. Soc. Copenhagen; Mem. Assoc. Soc. Roy. de Bot. de Belgique; Mitg. Kais.-Leop.-Carol. Deutsch. Acad. der Naturf. in Halle. <i>Royal Gardens, Kew.</i>	1886-88 96-97 V.P. 1896-97
1901	Thomas, M. R. Oldfield, F.Z.S. F.R.G.S. Senior Assistant in the Zoological Department of the British Museum. 9 <i>St. Petersburg Place, Bayswater, W.</i>	

Date of
Election

Service on
Council, &c.

- 1891 Thompson, Silvanus Phillips, B.A. D.Sc. (Lond.), M.D. (Königsberg), F.R.A.S. Reg. Acad. Sci. Suec. Soc., Phys. Verein, Francof. ad Mœnum. Soc. Honor. Soc. Phil. Ebor. Soc. Honor., Pres. Phys. Soc. Lond., Principal and Professor of Physics in the City and Guilds of London Technical College, Finsbury. *Morland, Chisleth Road, West Hampstead, N.W.*
- 1897 Thomson, John Millar, LL.D. (Glasg.) F.C.S. Professor of Chemistry in King's College, London. 85 *Addison Road, Kensington, W.*
- 1884 Thomson, Joseph John, M.A. Sc.D. (Dubl.) D.Sc. (Vict.) LL.D. (Glasg. 1889-91 Princeton) Hon. Mem. Lit. Phil. Soc. Manc., Roy. Dubl. Soc., R. 1898-1900 Accad. Sci. Turin, K. Vetensk.-Soc. Upsala; Fellow of Trinity College and Cavendish Professor of Experimental Physics, Cambridge. **Medals: Royal, Hughes.** *Trinity College, Cambridge.*
- 1893 Thornycroft, Sir John Isaac, M. Inst. C.E. *Eyot Villa, Chiswick Mall, Chiswick.*
- 1876 Thorpe, Thomas Edward, C.B.—**Foreign Secretary**—D.Sc. (Vict.) 1890-91 Sc.D. (Dubl.) Ph.D. (Heid.) LL.D. (Glasg.) V.P.C.S. Principal 93-95 of the Government Laboratories; Fellow of the University of 99- London; Hon. Fellow Roy. Soc. Edin.; Past Pres. Soc. Chem. **V.P.** 1894-95 Indust.; Soc. Chem. Berol. Socius; Soc. Phil. Glasc. Mem. **For. Sec.** 1899- Corr.; Soc. Phil. Leeds, Soc. Lit. Phil. Manc., Soc. Pharm. Soc. Honor.; Soc. Bat. Sci. Harl. Soc. Extr. **Medal: Royal.** *Government Laboratories, Clement's Inn Passage, Strand, W.C.; and Athenæum Club, S.W.*
- 1899 Threlfall, Richard, M.A. 30 *George Road, Edgbaston, Birmingham.*
- 1869 Thuillier, Sir Henry Edward Landor, General, R.A. C.S.I. F.R.G.S. *Tudor House, Richmond, Surrey.*
- 1880 Tilden, William Augustus, D.Sc. (Lond.) Sc.D. (Dubl.) F.C.S. F.I.C. 1892-94 Professor of Chemistry in the Royal College of Science, London; Hon. Mem. Pharm. Soc., Soc. Pub. Anal., Soc. Nat. Bristol, Phil. Soc. Birmingham. Coll. Pharm. Philad. *The Oaks, Northwood, Middlesex.*
- 1891 Tizard, Thomas Henry, Captain R.N. C.B. F.R.G.S. Assistant 1902- Hydrographer of the Admiralty. *Hydrographic Department, Admiralty, Whitehall, S.W.*
- 1889 Todd, Sir Charles, M.A. (Camb.) K.C.M.G. F.R.A.S. Postmaster-General, Superintendent of Telegraphs and Government Astronomer, South Australia. *The Observatory, Adelaide, South Australia.*
- 1878 Tomes, Charles Sissmore, M.A. (Oxon.). 9 *Park Crescent, Portland Place, W.*
- 1889 Tomlinson, Herbert, B.A. (Oxon.). 97 *Albert Bridge Road, S.W.*
- 1893 Trail, James William Helenus, A.M. M.D. C.M. (Aberd.) F.J.S. Regius Professor of Botany in the University of Aberdeen. *The University, Aberdeen, N.B.*
- 1881 Traquair, Ramsay H. M.D. LL.D. F.R.S.E. F.G.S. Keeper of the Natural History Collections in the Museum of Science and Art, Edinburgh. 8 *Dean Park Crescent, Edinburgh.*

Year-book of the Royal Society.

Date of
Election

Service on
Council, &c.

- 1883 Trimen, Roland, Hon. M.A. (Oxon.) F.L.S. F.Z.S. F.E.S. Hon. Mem. South African Phil. Soc. and Soc. Imp. Amis. Sci. Nat. de Mosc.; late Curator of the South African Museum. 19 *Emperor's Gate*, S.W.
- 1868 Tristram, Rev. Henry Baker, M.A. (Oxon.) LL.D. (Edin. and St. Andrews) D.D. C.M.Z.S. Canon of Durham. *College, Durham*.
- 1897 Trouton, Frederick Thomas, M.A. Sc.D. (Dubl.) Quain Professor of Physics in University College, London. 2 *Holland Park*, W.
- 1897 Turner, Herbert Hall, D.Sc. F.R.A.S. Savilian Professor of Astronomy in the University of Oxford. *University Observatory, Oxford*. 1901-
- 1877 Turner, Sir William, K.C.B. M.B. (Lond.) D.C.L. (Durh. Toronto and Oxf.) LL.D. (Glasg. and Univ. McGill) Sc.D. (Camb. and Dubl.) F.R.C.S. (Edin.) F.R.S.E.; Hon. Assoc. Ord. Hosp. St. John, Jerusalem; President of the General Medical Council; Professor of Anatomy in the University of Edinburgh; Hon. Prof. Anat. Roy. Soc. Acad.; Hon. Mem. Roy. Irish Acad.; Hon. Fell. Roy. Med. Chir. Soc. London; Hon. Fell. Obst. Soc. Lond. and Edin.; For. Assoc. Anthropol. Soc. Paris; Corr. Mem. Akad. Wiss. Berlin Soc. Anthropol. Ethnol. and Prehist. Arch. Berlin. Corr. Mem. Soc. Anthropol. Rome; Hon. Mem. Imp. Milit. Acad. Med. St. Petersburg. 6 *Eton Terrace, Edinburgh*; and *Athenæum Club*, S.W. 1890-91
- 1899 Tutton, Alfred E., B.Sc. F.C.S. A.R.C.S. 17 *Burdwell Road, Oxford*.
- 1871 Tylor, Edward Burnett, D.C.L. (Oxon.) LL.D. (St. And. Aberd. and McGill) Assoc. Acad. Reg. Belg. Professor of Anthropology in the University of Oxford. *Museum House, Oxford*. 1899-1900
- 1886 Unwin, W. Cawthorne, B.Sc. Mem. Inst. C.E.; Hon. Mem. Inst. M.E.; Mem. Amer. Phil. Soc.; Hon. Mem. Amer. Soc. Mech. Eng.; Professor of Engineering at the Central Technical College of the City and Guilds of London Institute. *Palace Gate Mansions, 29 Palace Gate, Kensington, W.* 1893-94
- 1894 Veley, Victor Herbert, M.A. D.Sc. 20 *Bradmore Road, Oxford*.
- 1883 Venn, John, Sc.D. *Vicarsbrook, Chaucer Road, Cambridge*.
- 1885 Vines, Sydney Howard, M.A. (Oxon.) D.Sc. (Camb. and Lond.) P.L.S. Sherardian Professor of Botany in the University of Oxford; Fellow of Magdalen College, Oxford; Hon. Fellow of Christ's College, Cambridge; Hon. Mem. Manc. Lit. Phil. Soc. and Roy. Phys. Soc. Edin.; Corr. Mem. Soc. Nat. Sci. et Math. de Cherb., Soc. Roy. Bot. de Belg., and Soc. Nat. Hist. Bost. *Headington Hill, Oxford*. 1890-92
- 1900 Walker, James, D.Sc. (Edin.) Ph.D. (Leipz.) Professor of Chemistry in University College, Dundee. 19 *Springfield, Dundee*.
- 1893 Wallace, Alfred Russel, LL.D. D.C.L. F.L.S. F.Z.S. **Medals: Royal, Darwin.** *Broadstone, Wimborne, Dorset*.

Date of Election		Service on Council, &c.
1892	Waller, Augustus Désiré, M.D. Lecturer on Physiology at St. Mary's Hospital Medical School. 32 <i>Grove End Road</i> , N.W.	
1887	Walsingham, Thomas de Grey, Lord, M.A. LL.D. High Steward of the University of Cambridge; Trust. Brit. Mus.; F.L.S. F.Z.S. F.E.S.; Mem. Soc. Ent. de France, Ent. Ver. zu Berlin, Netherlands Ent. Ver., Soc. Ent. de Russie, Linn. Soc. N.S.W. <i>Merton Hall, Thetford, Norfolk</i> .	1896-97
1888	Ward, Harry Marshall, D.Sc. F.L.S. Fellow of Sidney Sussex College, and Hon. Fellow of Christ's College, Cambridge; Professor of Botany in the University of Cambridge. Medal: Royal. <i>Botanical Laboratory, New Museums, Cambridge</i> .	1895-96
1886	Warrington, Robert, M.A. (Oxon.) F.C.S. late Sibthorpean Professor of Rural Economy in the University of Oxford. <i>High Bank, Harpenden, Herts</i> .	
1884	Warren, Sir Charles, Lieut.-General, R.E. G.C.M.G. K.C.B. 10 <i>Wellington Crescent, Ramsgate</i> ; and <i>Athenæum Club</i> , S.W.	
1881	Watson, Rev. Henry William, D.Sc. <i>The Rectory, Berkeswell, Coventry</i> .	
1901	Watson, William, D.Sc. A.R.C.S. (Lond.) Assistant Professor of Physics in the Royal College of Science, London. 7 <i>Upper Cheyne Row, Chelsea</i> , S.W.	
1900	Watts, Philip. 10 <i>Chelsea Embankment</i> , S.W.	
1890	Weldon, Walter Frank Raphael, M.A. D.Sc., late Fellow of St. John's College, Cambridge; Fellow of Merton College and Linacre Professor of Human and Comparative Anatomy in the University of Oxford. <i>Merton Lea, Oxford</i> .	1896-98
1886	Wharton, Sir William James Lloyd, Rear-Admiral, K.C.B. F.R.A.S. F.R.G.S. Hydrographer of the Admiralty. <i>Florys, Prince's Road, Wimbledon Park</i> ; and <i>Athenæum Club</i> , S.W.	1888-89 95-97
1901	Whetham, William Cecil Dampier, M.A. Lecturer in Physics and Fellow of Trinity College, Cambridge. 5 <i>St. Peter's Terrace, Cambridge</i> .	
1887	Whitaker, William, B.A. F.G.S. Assoc. Inst. C.E. Corr. Acad. Nat. Sci. Philad., Hon. Mem. Soc. Belg. de Géol. 3 <i>Camden Road, Croydon</i> .	
1888	White, Sir William Henry, K.C.B. LL.D. (Glasg.) D.Sc. (Camb.) F.R.S.E. Mem. Inst. C.E. Fellow Royal School of Naval Architecture; V.P. Inst. Naval Architects; Past. Pres. Inst. Mech. Eng.; For. Mem. Roy. Acad. Sci. Sweden; late Assistant Controller and Director of Naval Construction. 39 <i>Roland Gardens</i> , S.W.; and <i>Athenæum Club</i> , S.W.	1894-95
1886	Wilde, Henry, D.Sc. Past. Pres. Lit. Phil. Soc. Manch., Hon. Mem. Inst. Electr. Engs. <i>The Hurst, Alderley Edge, Cheshire</i> .	
1870	Wilks, Sir Samuel, Bart. M.D. LL.D. F.R.C.P. late Pres. R. Coll. Phys. Consulting Physician to Guy's Hospital. 8 <i>Prince Arthur Road, Hampstead</i> , N.W.	1899-1900
1902	Willey, Arthur, D.Sc. <i>The Museum, Colombo Ceylon</i> .	

Date of
ElectionService on
Council, &c.

- 1863 Williams, C. Greville, F.C.S. F.I.C. 21 Bournevale Road, Streatham, S.W.
- 1855 Williamson, Alexander William, Ph.D. (Giessen) D.C.L. (Dunelm.) 1859-61
LL.D. (Dubl. et Edin.) F.R.S.E. V.P.C.S. Hon. Mem. R.I.A. 69-71
Fellow of the Univ. of Lond.; Emeritus Prof. of Chemistry in Univ. 73-90
Coll. Lond.; Inst. Fr. (Acad. Sci.), Acad. Reg. Sci. Taurin., Soc. For. Sec.
Biol. Paris, Corresp.; Acad. Reg. Sci. Berol., Acad. Lync. Romæ, 1873-89
Soc. Reg. Sci. Gött. Soc. Extr.; Soc. Chem. Berol. et Amer. Nov. V.P.
Ebor., Soc. Lit. Phil. Manc. Soc. Honor. Medal: Royal. High 1889-90
Pitfold, Shottermill, Haslemere.
- 1879 Williamson, Benjamin, D.Sc. D.C.L. (Oxon.) M.R.I.A. Senior Fellow
of Trinity College, Dublin. Trinity College, Dublin.
- 1900 Wilson, Charles Thomson Rees, M.A. (Camb.) B.Sc. (Vict.) Sidney
Sussex College, Cambridge.
- 1874 Wilson, Sir Charles William, Major-General, R.E. K.C.B. K.C.M.G. 1889-90
D.C.L. (Oxon.) LL.D. (Edin.) M.E. (Dubl.) F.R.G.S. Athenæum
Club, S.W.
- 1896 Wilson, William E., D.Sc. (Dubl.) M.R.I.A. F.R.A.S. Daramona,
Streete, Westmeath, Ireland.
- 1898 Wimshurst, James, Mem. Inst. Elect. Eng. 7 Crescent Grove,
Clapham Common, S.W.
- 1899 Windle, Bertram Coghill Alan, M.A. M.D. Sc.D. (Dubl.) M.Sc.
(Birm.) F.S.A. F.R.S. Antiq. Ireland; Professor of Anatomy and
Dean of the Medical Faculty, University of Birmingham.
Weatherbury, Harborne, Birmingham.
- 1895 Wolfe Barry, Sir John, K.C.B. LL.D. Past. Pres. Inst. C.E. 23 Dela- 1902-
hay Street, Westminster, S.W.
- 1901 Woodward, Arthur Smith, LL.D. F.L.S. F.G.S. F.Z.S. F.R.G.S.
Keeper of the Department of Geology, British Museum (Natural
History). 4 Scarsdale Villas, Kensington, W.
- 1873 Woodward, Henry, LL.D. (St. And.) F.G.S. V.P.Z.S. F.R.M.S.
Pres. Palæont. Soc. V.P. Malacol. Soc. Lond. Acad. Sci. Nov. Ebor.
Soc. Phil. Amer. Philad. Soc.; Soc. Phil. Ebor., Assoc. Geol.
Lond., Soc. Geol. Edin., Glasc., Liverp. et Nordov. Soc. Honor.;
Soc. Géol. Belg., Imp. Nat. Hist. Mosq., Hist. Nat. Montreal et
Malacol. Belg. Corresp.; late Keeper of the Department of
Geology, British Museum (Natural History). 129 Beaufort
Street, Chelsea, S.W.
- 1896 Woodward, Horace Bolingbroke, F.G.S. Assistant Director of the
Geological Survey. Hon. Mem. Norfolk Nat. Soc. and Yorksh.
Phil. Soc. Geological Survey, Jermyn Street, S.W.
- 1893 Worthington, Arthur Mason, C.B. M.A. F.R.A.S. Headmaster and
Professor of Physics, Royal Naval Engineering College, Devonport.
Mohuns, Tavistock.

Date of
Election

Service on
Council, &c.

- 1896 Wynne, William Palmer, D.Sc. (Lond.) F.C.S. F.I.C. A.R.C.S.
Professor of Chemistry in the Pharmaceutical Society's School of
Pharmacy. 9 *Selwood Place, Onslow Gardens, S.W.*
- 1889 Yeo, Gerald Francis, M.D. (Dublin) F.R.C.S. Emeritus Professor of
Physiology in King's College, London. *Bowden, Totnes, South
Devon.*
- 1893 Young, Sydney, D.Sc. (Lond.) F.C.S. F.I.C. Professor of Chemistry
in University College, Bristol. 6 *Windsor Terrace, Clifton,
Bristol.*

FOREIGN MEMBERS.

Date of
Election.

Medal.

1891. Agassiz, Alexander. *Cambridge, Mass., U.S.A.*
1897. Amagat, Émile Hilaire. *École Polytechnique, Paris.*
1879. Auwers, Georg Friedrich Julius Arthur, *Lindenstrasse,
91, Berlin.*
1885. Baeyer, Adolf von. *Universität, Munich*
1877. Berthelot, Marcellin. *Secrétariat de l'Institut, Paris.*
1899. Boltzmann, Ludwig. *Universität, Leipzig*
1902. Brøgger, Prof. Waldemar Christofer. *K. Frederiks Universitet,
Christiania*
1889. Cannizzaro, Stanislao. *Reale Università, Rome.*
1889. Chauveau, Jean Baptiste Auguste. *Avenue Jules Janin, 10,
Paris.*
1879. Cremona, Luigi. *S. Pietro in Vincoli, Rome*
1902. Darboux, Prof. Gaston. *Secrétariat de l'Institut, Paris*
1899. Dohrn, Anton. *Naples.*
1899. Fischer, Emil. *Universität, Berlin*
1895. Gaudry, Albert. *Rue des Saints-Pères, 7 bis, Paris.*
1884. Gegenbaur, Carl. *Leopoldstrasse, 57, Heidelberg.*
1897. Gibbs, J. Willard, *Yale College, New Haven, Conn.*
1896. Heim, Albert. *Hochschule, Zürich*
1902. Hering, Prof. Ewald. *Universität, Leipzig*
1902. Hill, George William. *West Nyack, New York State, U.S.A.*
1897. Hoff, J. H. van't. *Universität, Berlin.*
1875. Janssen, Pierre Jules César. *Observatoire de Meudon, Paris*
1885. Klein, Felix. *Weender Chaussee, 6, Göttingen.*
1897. Koch, Robert. *Universität, Berlin*
1895. Kohlrausch, Friedrich. *Physikalisch-Technische Reichsan-
stalt, Berlin.*
1860. Kölliker, Albert von. *Universität, Würzburg*
1895. Langley, Samuel Pierpont. *Smithsonian Institution, Washing-
ton, U.S.A.*
1901. Leydig, Franz von. *Rothenberg a.d. T.*

Davy.
Copley, Davy.

Copley.

Copley.
Copley.

Rumford.

Copley.

Date of Election.		Medal.
1896.	Lippmann, Gabriel. <i>Faculté des Sciences à la Sorbonne, Paris</i>	
1892.	Mascart, Éleuthère Élie Nicolas. <i>Rue de l'Université, 176, Paris</i>	
1892.	Mendeleeff, Dmitri Ivanovitch. 19, <i>Zabalkansky, St. Petersburg</i>	Davy.
1895.	Metschnikoff, Elias. <i>Institut Pasteur, Paris</i>	
1902.	Michelson, Prof. Albert Abraham. <i>University, Chicago, U.S.A.</i>	
1896.	Mittag-Leffler, Gösta. <i>Högskolan, Stockholm</i>	
1899.	Neumayer, Georg. <i>Hamburg</i>	
1877.	Newcomb, Simon. 1620, <i>P Street, Washington, U.S.A.</i>	Copley.
1897.	Pfeffer, Wilhelm. <i>Universität, Leipzig</i>	
1868.	Pflüger, Eduard Friedrich Wilhelm. <i>Universität, Bonn</i>	
1894.	Poincaré, Henri. 68, <i>Rue Claude-Barnard, Paris</i>	Sylvester.
1879.	Quincke, Georg Hermann. <i>Friedrichsbau, Heidelberg</i>	
1902.	Richthofen, Baron Ferdinand von. <i>Universität, Berlin</i>	
1896.	Schiaparelli, Giovanni. <i>R. Osservatorio Astronomico di Brera, Milan</i>	
1902.	Solms-Laubach, Graf H. zu. <i>Universität, Strasburg</i>	
1891.	Strasburger, Eduard. <i>Universität, Bonn</i>	
1873.	Struve, Otto Wilhelm. <i>Fahnstrasse, 8, Carlsruhe, Germany</i> ..	
1894.	Suess, Eduard. <i>Geologisches Museum, Vienna</i>	
1891.	Tacchini, Pietro. <i>Ufficio Meteorologico Centrale, Rome</i>	Rumford.
1902.	Thomsen, Prof. Julius. <i>Universitet, Copenhagen</i>	
1899.	Treub, Melchior. <i>Buitenzorg, Java</i>	
1897.	Zirkel, Ferdinand. <i>Universität, Leipzig</i>	

FELLOWS DECEASED BETWEEN THE ANNIVERSARY,
NOVEMBER 30, 1901, AND JANUARY 1, 1903.

On the Home List.

Abel, Sir Frederick Augustus, Bart., K.C.B., G.C.V.O.	Gladstone, John Hall, Ph.D., D.Sc.
Barlow, William Henry.	Roberts-Austen, Sir William Chandler, K.C.B.
Dufferin and Ava, Frederick Temple Blackwood, Marquis of, K.P.	Simpson, Maxwell, B.A., M.B.
Gilbert, Sir Joseph Henry, M.A.	Temple, Rt. Hon. Sir Richard, Bart., G.C.S.I.
Wilson, George Fergusson.	

On the Foreign List.

Cornu, Alfred.
Virchow, Rudolf.
Wislicenus, Johannes.

CHANGE OF NAME AND TITLE.

Jackson, Right Hon. William Lawies, to Allerton, Lord.

FELLOWS ELECTED BETWEEN THE ANNIVERSARY,
NOVEMBER 30, 1901, AND JANUARY 1, 1903.

1902. Alverstone, Richard Everard Webster, Lord, G.C.M.G.	1902. Kidston, Robert.
1902. Baker, H. Brereton.	1902. Long, Rt. Hon. Walter Hume.
1902. Bovey, Prof. Henry T.	1902. Mather, Thomas.
1902. Boyce, Prof. Rubert.	1902. Michell, John Henry.
1902. Brown, John.	1902. Newall, Hugh Frank.
1902. Goldie, Rt. Hon. Sir George D. Taubman, K.C.M.G.	1902. Petrie, Prof. W. M. Flinders.
1902. Hardy, William Bate.	1902. Plunkett, Rt. Hon. Horace Curzon.
1902. Harker, Alfred.	1902. Pope, Prof. William Jackson.
1902. Hough, Sydney Samuel.	1902. Saunders, Edward.
	1902. Stirling, Rt. Hon. Sir James.
	1902. Willey, Arthur.

On the Foreign List.

Brögger, Prof. Waldemar Christofer.	Michelson, Prof. Albert Abraham.
Darboux, Prof. Gaston.	Richthofen, Baron Ferdinand von.
Hering, Prof. Ewald.	Solms-Laubach, Graf H. zu.
Hill, Dr. George William.	Thomsen, Prof. Julius.

COMMITTEES, 1903.

NOTE.—“Chairman,” as used below, is to be understood as the Fellow appointed to act as Chairman in the absence of the President, who by Statute presides over all Committees which he attends.

The Treasurer, Secretaries, and Foreign Secretary shall be considered as *ex officio* members of all Committees (excepting the Scientific Relief Committee, the Sectional Committees, and any Committees composed of representatives of the Royal and other Societies jointly).

Each Committee, excepting those named in the preceding paragraph, shall have power to add to its number, provided that any persons so added, if not Fellows of the Royal Society, shall be called “accessory members.”

SECTIONAL COMMITTEES.

1. Mathematics Committee :—

(Two to retire each year.)

(Mathematics, Mathematical Physics, Crystallography, and Mathematical Astronomy.)

Chairman—Prof. Love.

	To serve.	
Prof. Greenhill	1 year.	Retires Dec., 1903.
„ Elliott	1 „	„ „ „
Dr. Hobson	2 years.	„ „ 1904.
Prof. Love	2 „	„ „ „
Dr. Baker	3 „	„ „ 1905.
„ W. D. Niven	3 „	„ „ „

2. Physics and Chemistry Committee :—

(Four to retire each year.)

(Experimental Physics, Observational Astronomy, Meteorology,
Chemistry, and Metallurgy.)*Chairman*—Prof. Clifton.

	To serve.			
Prof. Callendar	1 year.	Retires	Dec., 1903.	
„ Clifton	1 „	„	„	„
„ J. J. Thomson	1 „	„	„	„
„ Wynne	1 „	„	„	„
„ Frankland	2 years.	„	„	1904.
Mr. A. V. Harcourt	2 „	„	„	„
Prof. Schuster	2 „	„	„	„
Dr. W. N. Shaw	2 „	„	„	„
Mr. F. W. Dyson	3 „	„	„	1905.
Prof. Poynting	3 „	„	„	„
Dr. A. Scott	3 „	„	„	„
Prof. Trouton	3 „	„	„	„

3. Geology Committee :—

(Three to retire each year.)

(Geology, Palæontology, Mineralogy, and Geography.)

Chairman—Prof. Bonney.

	To serve.			
Prof. Bonney	1 year.	Retires	Dec., 1903.	
Sir A. Geikie	1 „	„	„	„
Prof. Lapworth	1 „	„	„	„
Sir J. Kirk	2 years.	„	„	1904.
Mr. Marr	2 „	„	„	„
Prof. Sollas	2 „	„	„	„
Capt. Tizard	3 „	„	„	1905.
Dr. A. S. Woodward	3 „	„	„	„
Mr. H. B. Woodward	3 „	„	„	„

4. Botany Committee :—

(Three to retire each year.)

Chairman—Prof. M. Ward.

	To serve.			
Prof. Balfour	1 year.	Retires	Dec., 1903.	
Mr. G. Murray	1 „	„	„	„
„ Seward	1 „	„	„	„
„ H. T. Brown	2 years.	„	„	1904.

4. Botany Committee—*continued*—

	To serve.			
Prof. Farmer	2 years.	Retires	Dec., 1904.	
Mr. Hemsley	2	"	"	"
Dr. Masters	3	"	"	1905.
Prof. Oliver	3	"	"	"
„ M. Ward	3	"	"	"

5. Zoology Committee :—

(Three to retire each year.)

(Zoology and Comparative Anatomy.)

Chairman—Mr. Bateson.

	To serve			
Mr. Bateson	1 year.	Retires	Dec., 1903.	
Prof. Lankester	1	"	"	"
Rev. T. R. R. Stebbing...	1	"	"	"
Mr. Harmer	2 years.	"	"	1904.
Prof. Hickson	2	"	"	"
Mr. Lydekker	2	"	"	"
Dr. Gadow	3	"	"	1905.
Prof. Howes	3	"	"	"
Mr. Sharp	3	"	"	"

6. Physiology Committee :—

(Four to retire each year.)

(Animal Physiology and Medical Subjects.)

Chairman—Prof. Halliburton.

	To serve.			
Dr. L. Hill	1 year.	Retires	Dec., 1903.	
„ Manson	1	"	"	"
„ Pavy	1	"	"	"
Sir J. Burdon-Sanderson..	1	"	"	"
Lieut.-Col. Bruce	2 years.	"	"	1904.
Prof. Gotch	2	"	"	"
Dr. Klein	2	"	"	"
„ Waller	2	"	"	"
Prof. Halliburton	3	"	"	1905.
Dr. Langley	3	"	"	"
Prof. McKendrick	3	"	"	"
„ Sherrington	3	"	"	"

STANDING AND OCCASIONAL COMMITTEES.

LIBRARY COMMITTEE.

Chairman—Prof. Carey Foster.

Prof. W. Grylls Adams, Prof. Bonney, Prof. Carey Foster, Prof. Greenhill, Prof. Halliburton, Mr. Mathews, Prof. McLeod, Dr. H. Müller, Prof. A. Newton, Prof. D. Oliver, Dr. Sclater, and Prof. S. P. Thompson, with power to expend not exceeding £250 in the purchase of books, and a sum not exceeding £150 in binding books belonging to the Society.

SOIRÉE COMMITTEE.

Chairman—Sir W. Crookes.

Prof. Ayrton, Mr. Boys, Prof. Callendar, Sir W. Crookes, Sir J. Evans, Prof. Howes, Prof. Lankester, Major MacMahon, Prof. Perry, Prof. Poulton, Sir W. H. Preece, Dr. D. H. Scott, Dr. R. H. Scott, Dr. W. N. Shaw, and Dr. H. Woodward, of whom three, to be determined by least attendance, retire annually.

HOUSE COMMITTEE.

Chairman—The Treasurer.

Prof. Ayrton, Mr. Boys, Prof. Ewing, Sir W. H. Preece, and Prof. S. P. Thompson.

CATALOGUE OF SCIENTIFIC PAPERS COMMITTEE.

Chairman—Sir John Evans.

Prof. Armstrong, Dr. W. T. Blanford, Sir John Evans, Prof. Forsyth, Prof. Judd, Dr. Klein, Sir J. N. Lockyer, Prof. McKendrick, Mr. McLachlan, Prof. McLeod, Dr. Mond, Sir W. H. Preece, Dr. Routh, Dr. D. H. Scott, and Prof. Tilden.

“CHALLENGER” COMMITTEE.

Chairman—Sir J. D. Hooker.

Sir J. D. Hooker, Prof. Lankester, Sir J. Murray, and Sir W. T. Thiselton-Dyer.

SCIENTIFIC RELIEF COMMITTEE.

Chairman—Prof. Bonney.

Dr. W. T. Blanford, Prof. T. G. Bonney, Dr. Glaisher, Dr. L. Mond, Prof. A. Newton, Dr. P. H. Pye-Smith, Dr. W. J. Russell, Dr. R. H. Scott, Prof. W. A. Tilden, and Dr. Waller.

JOINT PERMANENT ECLIPSE COMMITTEE.

(On the part of the Royal Society.)

Sir W. de W. Abney, Mr. Christie, Dr. Common, Sir J. N. Lockyer, Major MacMahon, Prof. Schuster, Sir G. G. Stokes, Dr. G. J. Stoney, Gen. Tennant, Dr. Thorpe, and Adm. Sir W. J. L. Wharton.

CORAL REEF COMMITTEE.

Chairman—Prof. Bonney.

Prof. Armstrong, Dr. Blanford, Prof. Bonney, Sir W. Crookes, Mr. F. Darwin, Sir J. Evans, Sir A. Geikie, Dr. G. J. Hinde, Prof. Judd, Prof. Lankester, Prof. Lapworth, Sir J. Murray, Prof. Sollas, Dr. Sorby, Mr. Teall, Adm. Sir W. J. L. Wharton, and Sir J. Wolfe Barry, with Capt. A. M. Field and Prof. W. W. Watts as accessory members.

MALARIA AND TSETSE FLY COMMITTEE.

Chairman—Lord Lister.

Prof. Clifford Allbutt, Prof. Rubert Boyce, Prof. Bradford, Lieut.-Colonel D. Bruce, Sir J. Kirk, Prof. E. R. Lankester, Lord Lister, Dr. Manson, Prof. Sidney Martin, Major R. Ross, Sir J. Burdon-Sanderson, and Prof. Sherrington, with Mr. C. P. Lucas of the Colonial Office, Prof. McFadyean, and Mr. H. G. Plimmer as accessory members.

EVOLUTION COMMITTEE.

Chairman—Mr. F. D. Godman.

Mr. W. Bateson, Mr. Burbury, Mr. F. Darwin, Prof. Ewart, Mr. F. D. Godman, Prof. Lankester, Prof. Macalister, Mr. McLachlan, Dr. Masters, and Prof. Poulton, with Sir E. Clarke and Mr. W. Heape as accessory members.

GOVERNMENT GRANT REVIEW COMMITTEE.

Chairman—Dr. H. Müller.

Prof. Bonney, Prof. Halliburton, Dr. H. Müller, Mr. W. D. Niven, Prof. Reinold, Dr. Russell, and Dr. D. H. Scott.

OBSERVATORIES COMMITTEE.

Chairman—The Astronomer Royal.

The Astronomer Royal, the President of the Royal Astronomical Society, Sir W. de W. Abney, Prof. G. H. Darwin, Sir J. Eliot, Sir J. N. Lockyer, Mr. Newall, Sir Arthur Rücker, Prof. Schuster, Mr. Shaw, Sir G. G. Stokes, Gen. Sir R. Strachey, and Prof. Turner.

FINANCE COMMITTEE.

Chairman—The Treasurer.

Dr. Mond, Dr. Müller, Sir Andrew Noble, Dr. R. H. Scott, and Mr. J. W. Swan.

INDIAN GOVERNMENT BOTANICAL ADVISORY COMMITTEE.

Chairman—Gen. Sir R. Strachey.

Major Alcock, Dr. Blanford, Sir D. Brandis, Mr. H. T. Brown, Mr. Gamble, Sir G. King, Mr. Schlich, Gen. Sir R. Strachey, Sir W. T. Thiselton-Dyer, and Prof. H. M. Ward.

JOINT ANTARCTIC COMMITTEE.

(On the part of the Royal Society.)

The President, The Treasurer, Sir M. Foster, Sir Arthur Rücker, Dr. A. Buchan, Capt. Creak, Sir J. Evans, Sir A. Geikie, Prof. Herdman, Sir J. D. Hooker, Prof. Poulton, Dr. P. L. Selater, Dr. R. H. Scott, Mr. J. J. H. Teall, Capt. Tizard, and Adm. Sir W. J. L. Wharton.

MACKINNON BEQUEST COMMITTEE.

Mr. H. T. Brown, Prof. Callendar, Prof. Dewar, Prof. Herdman, Prof. Schäfer, Mr. J. J. H. Teall, and Prof. J. J. Thomson.

INTERNATIONAL EXPLORATION OF THE SEA COMMITTEE.

Chairman—Prof. McIntosh.

Prof. Herdman, Prof. Lankester, Prof. McIntosh, and Sir John Murray.

INTERNATIONAL ASSOCIATION OF ACADEMIES COMMITTEE.

Chairman—Sir Michael Foster.

Prof. Armstrong, Prof. Forsyth, Sir A. Geikie, Lord Kelvin, Prof. Lankester, Sir N. Lockyer, Sir Arthur Rücker, Prof. Schuster, Prof. Sherrington, and Dr. Waller.

VOLCANOES COMMITTEE.

Chairman—Mr. Hudleston.

Prof. Bonney, Mr. Hudleston, Prof. Judd, Prof. Milne, Mr. Teall.

SEISMOLOGICAL COMMITTEE.

Chairman—Prof. Judd.

Sir W. Abney, Mr. Boys, Prof. G. H. Darwin, Prof. Ewing, Prof. Judd, Prof. Milne, Prof. Perry, Mr. C. Reid, Mr. Teall.

"SECTIONAL COMMITTEES" COMMITTEE.

Prof. Armstrong, Dr. Blanford, Mr. Boys, Prof. Carey Foster, Prof. Sherrington, Prof. Turner.

STATUTES OF THE ROYAL SOCIETY.

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CHAPTER I.

Of the Election and Admission of Fellows.

I. No person shall be proposed, elected, or admitted a Fellow of the Society on the day of the Anniversary Meeting for electing the Council and Officers.

II. Every Fellow, previously to his proposing a person as a Candidate for Election, shall inform him of the Obligation to be subscribed, of the sum to be paid for admission money, and of the payments to be made to the Society, before he can be admitted a Fellow.

III. Every such Candidate shall be proposed and recommended by a certificate in writing signed by six or more Fellows, of whom three at least shall certify their recommendation from personal knowledge. The certificate shall specify the name, rank, profession, qualifications, and usual place of residence of the Candidate; and being delivered to one of the Secretaries, or to the Assistant Secretary,

shall be registered, with the date of delivery, in a book to be kept for the purpose, and read at the next ordinary meeting; and, if so ordered, shall be suspended in some convenient place in the apartments of the Society until the day of election.

IV. At the first Ordinary Meeting of the Society in March, the names of all Candidates proposed subsequently to the first Meeting in March of the preceding year, including those whose certificates have been resuspended as hereinafter provided, shall be announced by the Secretary from a list arranged in alphabetical order, without reference to the dates of the certificates of the Candidates; and these certificates shall remain suspended until the day of Election.

V. In the first week in April, a list shall be printed, containing the names of all the Candidates so announced at the first Meeting in March, arranged in alphabetical order, without reference to the dates of the certificates, together with the names of the Fellows by whom each candidate is proposed and recommended; and a copy of such list shall immediately thereafter be sent to every Ordinary Fellow.

VI. The Council shall select by ballot from such printed list of Candidates a number not exceeding fifteen, to be recommended to the Society for Election; but no such selection by the Council shall be valid unless eleven Members at least be present and vote, a majority deciding, or in the event of equality the President having a second or casting vote.

VII. At the first Ordinary Meeting of the Society in May, the President shall read from the Chair the names of the Candidates whom the Council have selected as most eligible, arranged in alphabetical order; and after such Meeting, a circular letter shall be forthwith sent to every Fellow, naming the day and hour of Election, and inclosing a printed list of the selected Candidates, with space for such alterations as any Fellow may determine to make in pursuance of Statute IX of this Chapter.

VIII. The election of Ordinary Fellows not included in the privileged classes referred to in Statutes XII and XIII of this Chapter, shall take place on the first Thursday of June; unless the Council shall alter the day of Election to any other day in the month of June, in which case due notice of such alteration shall be given to every Ordinary Fellow.

IX. On the day of Election two Scrutators shall be nominated by the President, with the approbation of the Society, to assist the Secretaries in examining the lists; and each Fellow present and

voting, shall deliver to one of the Secretaries or Scrutators one of the printed lists mentioned in Statute VII of this Chapter, having erased the name of any Candidate or Candidates for whom he does not vote, and, if he shall have thought fit, having substituted or added the name of any other Candidate or Candidates contained in the printed list sent in pursuance of Statute V of this Chapter.

X. One of the Secretaries shall take down the names of the Fellows who vote, and the Scrutators, after examining the lists with the Secretaries, shall report to the President the names of the Candidates who shall have been duly elected in compliance with the Charters, and the President shall announce those names from the Chair.

XI. Any Candidate announced at the first Ordinary Meeting of the Society in March, as aforesaid, who shall not have been elected, shall, if his proposers, or any one of them, so request in writing, continue a candidate; his name shall be placed in alphabetical order with those of the new Candidates to be announced in March following, and his certificate shall be suspended along with those of the new Candidates. Any additional qualifications of such a Candidate may be set forth in a supplementary certificate to be signed by not fewer than six Fellows.

XII. Any one of His Majesty's subjects who is a Prince of the Blood Royal may be proposed at one of the Ordinary Meetings of the Society by any Fellow, and may be put to the vote for Election on the same day, provided public notice of such proposition shall have been given by the proposer at the preceding Meeting of the Society.

XIII. In cases in which the Council is of opinion that, in the interests of the advancement of Natural Knowledge, it is desirable that persons be elected Fellows of the Society otherwise than as provided by Statutes III to XII of this Chapter, they may, once in every two years, recommend to the Society for election not more than two persons, who, in their opinion, either have rendered conspicuous service to the cause of science, or are such that their election would be of signal benefit to the Society. The persons so recommended shall be selected by the Council by ballot, in accordance with the procedure established by Standing Orders of Council. Provided always that no person shall be so recommended unless he obtains four-fifths of the votes of the Members present.

At the Ordinary Meeting of the Society next following the Meeting of Council at which such selection is made, the person or

persons nominated shall be proposed for election by means of a certificate prepared in accordance with Statute III of this Chapter, no distinction, however, being made between personal and general knowledge, and the ground on which the candidate has been nominated by the Council, that is to say, whether as having rendered conspicuous service to the cause of science, or as such that his election would be of signal benefit to the Society, being alone stated as the qualification. Such certificate, on being allowed by the Society, shall be suspended in some convenient place in the apartments of the Society until the day on which a ballot is taken upon it. The date for the ballot, which shall not be earlier than the third Ordinary Meeting after that at which the certificate is read, shall be announced at the head of the certificate.

XIV. Every person who is elected a Fellow shall appear for his admission on or before the fourth Ordinary Meeting of the Society after the day of his Election, or within such further time as shall, for some sufficient cause, be granted by the Council; otherwise his election shall be void.

XV. The admission of any Fellow into the Society shall be at some Ordinary Meeting, in manner and form following, he having first made the payments required by the Statutes. Immediately after the reading of the Minutes has been concluded, he shall subscribe the Obligation in the Charter-book, and be introduced to the President, who, taking him by the hand, shall say these words: *I do, by the authority and in the name of the Royal Society of London, for improving natural knowledge, admit you a Fellow thereof.*

XVI. The Election, the payments made previous to admission, and the admission of every person into the Society, with the time thereof, shall be recorded in the Journal-book.

XVII. No person shall be deemed a Fellow of the Society until he has made the payments required by the Statutes: nor shall he be entitled to vote at any Election or Meeting of the Society until he shall have been admitted in the manner and form above specified.

XVIII. Persons may be elected into the Society, under the title of Foreign Members, who are neither natives nor inhabitants of His Majesty's dominions, and shall be exempted from the operation of Chapters II and III of these Statutes; they shall be selected from among men of the greatest eminence for their scientific discoveries and attainments.

XIX. The Council shall from time to time, as they shall see fit, put in nomination persons for Election as Foreign Members, not exceeding, with those already elected, the number of fifty.

XX. A book shall be kept in which Members of the Council may enter the names of those men of science whom they suggest as Foreign Members; each entry shall be signed by the proposer and be accompanied by a short statement of the principal grounds on which the suggestion is made, and shall be valid for three years only.

XXI. When vacancies are to be filled up, a list of the persons so entered shall be sent to each Member of the Council, together with notice of the Meeting at which the list will be considered. At the Meeting thus appointed further entries may be made, and the claims of those men of science whose names have been duly entered in the book shall be considered, and a selection of names shall be made, from among which the Council, at a subsequent Meeting to be then appointed, may make nominations to the Society.

XXII. At the second Meeting the selection of the Candidates to be nominated shall be by ballot; when, if two-thirds of the Members of the Council present be in favour of the nomination of any Candidate, his name shall be proposed at the next Ordinary Meeting of the Society, and shall be put to the vote at the following Ordinary Meeting.

CHAPTER II.

Of the Obligation to be Subscribed.

EVERY person elected a Fellow of the Society shall, before his admission, subscribe the Obligation in the following words:—

We who have hereunto subscribed, do hereby promise each for himself, that we will endeavour to promote the good of the Royal Society of London, for improving natural knowledge, and to pursue the ends for which the same was founded; that we will be present at the Meetings of the Society, as often as conveniently we can, especially at the Anniversary Elections, and upon extraordinary occasions; and that we will observe the Statutes and Orders of the said Society. Provided, that whensoever any of us shall signify to the President under his hand, that he desireth to withdraw from the Society, he shall be free from this Obligation for the future.

And if any person elected shall refuse to subscribe the said Obligation, the election of that person shall be void.

CHAPTER III.

Of the Payments to be made by the Fellows to the Society.

I. EVERY person elected a Fellow of the Society shall, before he is admitted, pay the sum of *ten pounds* for admission money, the sum of *four pounds* for the year of his election, and the same sum annually in advance so long as he shall continue a Fellow of the Society. And if any such person shall refuse or fail to pay the said sums, he shall not be admitted, and his Election shall be void: except the said sums be remitted in whole, or in part, by special order of the Council. Provided always that, except in the case of Fellows elected under Statutes XII and XIII of Chapter I, the admission fee of each Fellow shall be paid out of the Fee Reduction Fund, and shall not be demanded of the Fellow; and that, except in the case of Fellows elected under Statutes XII and XIII of Chapter I, and Fellows elected before January, 1879, *one pound* of the annual contribution shall be paid out of the Fee Reduction Fund.

II. All who have or may become Fellows of the Society may at any time compound for their annual payments, by paying at once the sum of *sixty pounds*.

III. All Annual Contributions shall be considered to be due on the 25th day of March in each year. Every Fellow of the Society liable to an Annual Payment shall (previously to the 25th day of March in every year) bring or send the same to the Treasurer or the Assistant Secretary. And if any such Fellow, after notice sent by post to his usual address, in May, and again in September, shall fail to pay the same before the first day of October in each year, his name shall be suspended in the public Meeting-room of the Society as being in arrear, and shall continue so suspended until the sum due be paid. And if any such Fellow shall fail to pay his subscription on or before the first day of November in each year, no satisfactory reason having been assigned to the President and Council for such non-payment, he shall cease to be a Fellow of the Society. Provided, nevertheless, that on a solicitation for readmission being addressed to the President and Council by an individual so circumstanced, within the space of one year following St. Andrew's Day, the case of the individual so soliciting shall be stated by the President from the Chair, at one of the Ordinary Meetings of the Society, and the question of his readmission be put to the vote at the next Ordinary Meeting of the Society.

CHAPTER IV.

Of the Death or Recess of any Fellow.

THE Death or Recess of any Fellow of the Society shall be recorded in the Journal-book of the Society, and the names of such persons announced from the Chair, at the Anniversary Meeting for electing the Council and Officers.

CHAPTER V.

Of the Causes and Form of Ejection.

I. If any Fellow of the Society shall contemptuously or contumaciously disobey the Statutes or Orders of the Society or Council ; or shall, by speaking, writing, or printing, publicly defame the Society ; or advisedly, maliciously, or dishonestly do anything to the damage, detriment, or dishonour thereof, he shall be ejected out of the Society.

II. Whensoever there shall appear to be cause for the ejection of any Fellow out of the Society, the subject shall be laid before the Council ; and if a majority of the Council shall, after due deliberation, determine by ballot to propose to the Society the ejection of the said Fellow, the President shall in that case, at some Ordinary Meeting of the Society, announce from the Chair such determination of the Council ; and at the Ordinary Meeting next after that at which the said announcement has been made, the Society shall proceed to determine the question ; and on its appearing that two-thirds of the Members present have voted for the ejection of the said Fellow, the President shall proceed to cancel his name in the Register, and at the same time pronounce him ejected in these words :—

I do, by the authority and in the name of the Royal Society of London, for improving natural knowledge, declare A. B. to be now ejected, and no longer a Fellow thereof.

And the ejection of every such person shall be then recorded in the Journal-book of the Society ; and his name, as ejected, be also read at the next Anniversary Meeting for Elections.

CHAPTER VI.

Of the Election of the Council and Officers.

I. At the two Ordinary Meetings of the Society next preceding the day of the Anniversary Election, the President shall give notice

of the said Election ; and declare how much it imports the good of the Society, that such persons may be chosen into the Council, as are most likely to attend the Meetings and business of the Council, out of whom there may be made the best choice of a President and other Officers.

II. Every Fellow of the Society whose residence is known, shall have notice of the Anniversary Meeting for electing the Council and Officers for the year ensuing, by particular summons, which summons shall be sent to the place of residence of such Fellow, a week at the least before the day of Meeting, and shall be to this effect:—

*These are to give notice, that on the day of
the Council and Officers of the RÔYAL SOCIETY are to be elected
for the year ensuing ; at which Election your presence is expected,
at of the clock in the precisely.*

III. The Council for the ensuing year, out of which shall be chosen the President, Treasurer, Principal Secretaries, and Foreign Secretary, shall consist of eleven Members of the existing Council, and of ten Fellows who are not Members of the existing Council.

IV. The President and Council shall, previous to the Anniversary Meeting, nominate, by ballot, eleven Members of the existing Council, and also ten Fellows, not Members of the existing Council, whom they recommend to the Society for Election into the Council for the ensuing year. The President and Council shall, also, in like manner, nominate by ballot, out of the proposed Council, the persons whom they recommend to the Society for election to the offices of President, Treasurer, Principal Secretaries, and Foreign Secretary for the ensuing year.

V. At the Ordinary Meeting of the Society preceding the Anniversary Meeting, the names of such persons so recommended for election as Council and Officers for the ensuing year shall be announced from the Chair.

VI. Lists, with the names of the Fellows recommended by the President and Council, and having a blank column opposite for such alterations as any Fellow may wish to make, shall be prepared for the use of the Fellows, one week before the day of Election.

VII. Two Scrutators shall be nominated by the President, with the approbation of the Society, to assist the Secretaries in examining the lists.

VIII. Each Fellow voting, shall deliver his list to one of the Secretaries or Scrutators; and the name of each Fellow who shall so deliver in his list shall be noted by one of the Secretaries.

IX. The Scrutators, after examining the lists with the Secretaries, shall report to the Society the names of those having the majority of votes for composing the Council, and filling the offices of President, Treasurer, Principal Secretaries, and Foreign Secretary; the names of which persons shall then be announced from the Chair.

X. For electing any Member of the Council, or any Officer to be elected by the Society, upon such vacancies as shall happen in the intervals of the Anniversary Elections, the summons for such Election, and the proceedings in it, shall be after the same manner as is directed for the Anniversary Election.

XI. Upon any vacancy of the President's place, occurring in the intervals of the Anniversary Elections, the Treasurer, or, in his absence, one of the Secretaries, shall cause the Council to be summoned for the Election of a new President: and the Council meeting thereupon in the usual place, or any eleven or more of them, shall proceed to the said Election, and not separate until the major part of them shall have agreed upon a new President.

CHAPTER VII.

Of the President.

I. THE business of the President shall be to preside at all the meetings, and regulate all the debates, of the Society, Council, and Committees; to state and put questions both in the affirmative and negative, according to the sense and intention of the meetings; to call for reports and accounts from Committees, and others; to check irregularities, and to keep all persons to order; to summon all Meetings of the Council, and Committee of Papers; and to execute, or see to the execution of, the Statutes of the Society.

II. The President shall take precedence of every Fellow of the Society, at their ordinary place of meeting; and also in all other places, where any number of the Fellows meet as a Society, Council, or Committee.

III. In the absence of the President, one of the Vice-Presidents shall act as his deputy, and may do, in the absence of the President, the same acts as the President himself could do if present.

CHAPTER VIII.

Of the Treasurer and his Accounts.

I. THE Treasurer, or some person appointed by him, shall receive for the use of the Society, all sums of money due or payable to the Society; and shall pay and disburse all sums due from or payable by the Society; and shall keep particular Accounts of all such receipts and payments.

II. Every sum of money payable on account of the Society, exceeding Ten Pounds, shall be paid only by order of the Council; but payments for rates or taxes, to any amount, may be made by the Treasurer, without any specific order of the Council for that purpose.

III. All sums of money, which there shall not be present occasion for expending, or otherwise disposing of to the use of the Society, shall be laid out in such Government or other securities as shall be approved of and directed by the Council.

IV. The Treasurer shall keep a yearly account of all such Fellows of the Society as pay the sum appointed as the composition in lieu of annual payments; and also of those who make the annual payments: and in this account shall be noted the times up to which the annual payments have been made, and the arrears due from each Fellow.

V. The Treasurer shall also keep a book of Cheque Receipts for annual payments, to be filled up with the name of the Fellow paying, the sum paid, and the time for which payment is made; these Receipts to be signed by the Treasurer, or by the Assistant Secretary receiving the money on the Treasurer's behalf, who, upon the delivery of the Receipt to the Fellow paying, is to enter upon that part of the Cheque which is left in the Book, the above particulars, and also the day of payment.

VI. The Treasurer shall demand, or cause to be demanded, all arrears of annual payments, as soon as convenient after the first day of May.

VII. The Accounts of the Treasurer shall be audited annually, a short time preceding the Anniversary Elections, by a Committee consisting of three Members of the Council, of whom the President or one of the Secretaries to be one; and of three Fellows of the Society not Members of the Council, who are to be nominated by the President, with the consent of the major part of the Fellows present,

given by ballot at one of the three next preceding weekly meetings ; any one or more of the said three Members of the Council, together with any one or more of the said three Fellows, shall be a Quorum of the said Committee : the Members of the said Committee who are of the Council shall make their Report to the Council held next after such audit, on or before the Anniversary Election ; and the Members of the said Committee who are not of the Council shall make their Report to the Society, upon the Meeting next before the Anniversary Election, or on the day of the said Election.

VIII. The Treasurer shall have the charge of the Title Deeds of the Society's Estates, the Policies of Insurance, and Securities.

IX. As soon after the Audit as may be, and before the Anniversary Meeting, the Treasurer shall cause an abstract of the Society's Accounts of the preceding year to be printed for the use of the Fellows.

CHAPTER IX.

Of the Secretaries.

I. THE Secretaries, or one of them, shall have inspection over the Assistant Secretary ; and shall give the Orders and Directions concerning the entering and writing of all minutes or matters in the Journal-books of the Society or Council, or any other Books of the Society ; and also concerning any orders or other writings for the use and service of the Society.

II. The Secretaries, or one of them, shall attend all meetings of the Society, Council, and Committee of Papers ; where, when the President has taken the Chair, one of the Secretaries shall read the minutes, orders, and entries of the preceding meeting ; and shall afterwards take minutes of the business and orders of the present meeting, to be entered by the Assistant Secretary in the respective books to which they relate.

III. At the meetings of the Society, Lists of the Presents made from time to time to the Society shall be laid on the Table, by one of the Secretaries, for the inspection of the Fellows ; and the thanks of the Society to the Donors shall be proposed from the Chair previously to the reading of the first Paper. One of the Secretaries shall give notice of any Candidate who stands proposed for election into the Society at that Meeting ; and the Secretaries shall read Letters and Papers presented to the Society, in such manner as the President shall direct.

IV. The Secretaries shall draw up all letters to be written to any persons in the name of the Society or Council (to be read and approved of in some meeting of either respectively), except, for some particular cause or consideration, some other person be appointed by the Society or Council to draw up any such letter. They shall likewise have the charge (under the direction of the Committee of Papers) of printing the *Philosophical Transactions*, the *Proceedings*, and other Publications of the Society.

V. The letters relating to the business of the Society, received during each Session, shall be arranged and kept in the apartments of the Society.

VI The duty of the Secretary for Foreign Correspondence shall be to receive and answer all letters from foreign parts relating to the business of the Society, to return thanks for Presents from Foreigners made to the Society, and to forward to persons elected Foreign Members the Diplomas certifying their election into the Society.

CHAPTER X.

Of the Assistant Secretary.

I. THE person who shall be chosen to the office of Assistant Secretary, shall either not be a Fellow of the Society; or, if a Fellow, shall cease to be so upon his election to and acceptance of that office.

II. The appointment of a person to the office of Assistant Secretary shall be by the Council, to whom the Officer so appointed shall give security, at the discretion of the Council; and he shall reside in the Society's House.

III. The Assistant Secretary shall be paid for his services according to the determination of the Council; and shall not, besides such payments, receive any perquisite or profit whatsoever without the express permission of the President and Council. He shall be subject to such Rules and Orders as shall from time to time be made or given by the President and Council; and he shall constantly be in attendance during all meetings of the Society, Council, and Committees.

IV. He shall enter all the Minutes in the several Journal-books, and make an Index to every such book: he shall lay before every Council their fair Minute-book: and before every Committee of

Papers, the Society's Journal-book, to show that the several entries are fairly made: and he shall have the care of the writing of all Summonses of the Society, Council, and Committees.

V. He shall, under the direction of the Secretaries, have the charge and custody of the Charter-book, Statute-book, Journal-books of the Society and Council, Register-books, and Letter-books, as also of all Papers and Writings belonging to the Society; all which shall be kept in the House of the Society, that they may be in readiness to be produced at any meetings of the Society or Council, as the case may require, or as shall be ordered by the Society, Council or President.

VI. He shall not suffer any person, not being a Fellow of the Society, to read any Journal-book, Record, or Writing, or any part thereof, belonging to the Society; nor give any copy thereof, nor in any way communicate anything contained therein, to any such person.

VII. He shall follow the directions which may be given him from time to time by the Treasurer in respect of that part of his duties which relates to the Accounts or Cash Transactions of the Society. He shall enter in a book, to be provided by the Treasurer, all such sums as he may receive on account of the Society at the instant of receiving such sums; and for these sums, so entered by him, he shall be answerable, until he shall have paid them to the Treasurer.

VIII. He shall attend the Library at such hours as shall be appointed for him for the accommodation of such Fellows of the Society as shall come to read the printed books or manuscripts, and of any other person who shall be introduced by a Fellow, either personally or by letter.

IX. He shall mark with the stamp of the Society all books accepted or bought by the Society.

CHAPTER XI.

Of the Meetings of the Society.

I. THE Session of the Society shall commence on the third Thursday in November, and end on the third Thursday in June.

II. The Ordinary Meetings of the Society shall be on Thursdays weekly (excepting Christmas, Passion, Easter, and Whitsun weeks, and such other weeks at Christmas and Easter, in each year, as the

Council may in the preceding year determine, and also Ascension Day), and shall begin at half-past Four o'clock in the Afternoon precisely.

III. No stranger shall be permitted to be present during the Meeting, unless by invitation of the President, or by his leave or order upon the recommendation of some Fellow.

IV. The business of the Society in their Ordinary Meetings shall be to order, take account, consider, and discourse of philosophical experiments and observations; to read, hear, and discourse upon letters, reports, and other papers containing philosophical matters; as also to view, and discourse upon, rarities of nature and art: and thereupon to consider, what may be deduced from them, or any of them; and how far they, or any of them, may be improved for use or discovery.*

V. No letter, report, or other paper shall be read at any Ordinary Meeting unless it be communicated by a Fellow or Foreign Member; and it shall be the duty of each Fellow or Foreign Member to satisfy himself that any letter, report, or other paper which he may communicate, is suitable to be read before the Society.

VI. The conduct of the Ordinary Meetings shall be in accordance with the Standing Orders determined from time to time by the President and Council, provided always that at the Ordinary Meetings nothing relating to Statutes or management of the Society shall be brought forward or discussed.

VII. The Anniversary Meeting for the election of the Council and Officers, and the Annual Meeting for the election of Fellows, shall take place at an hour to be determined by the Council.

CHAPTER XII.

Of Special General Meetings of the Society.

I. THE President or Council may at any time call a Special General Meeting of the Society when it may appear to them to be necessary.

II. Any six Fellows may, by notice in writing, signed by them, and delivered to one of the Secretaries at an Ordinary Meeting of the Society, require a Special General Meeting of the Society to be convened, for the purpose of considering and determining on the matters

* This is the wording of the Statute as given in the Statutes of 1663.

specified in such requisition, and the Council shall, within one week after such requisition shall have been so delivered, appoint a day for a Special General Meeting accordingly.

III. One week's notice of any Special General Meeting shall be given to each Fellow resident in the United Kingdom, and such notice shall state the object of such Meeting.

IV. At such Meeting no business shall be brought forward except what shall have been so notified.

CHAPTER XIII.

Of the Publication of Papers.

I. THE Members of the Council for the time being shall constitute and be a standing Committee, to be called the Committee of Papers, to whom the consideration of the acceptance, reading, and publication of all papers communicated to the Society shall be referred, and who shall execute their powers in accordance with Standing Orders determined from time to time by the President and Council.

II. The Committee of Papers shall meet at such times as shall be appointed by the President; due and sufficient notice of such meeting having been previously sent to every Member of the Committee.

The publication of papers communicated to the Society, and of such other matters as the President and Council may judge fit to publish, shall take place under Standing Orders determined from time to time by the President and Council, but always in such a way that a proper portion of them shall from time to time be printed and published under the title of the 'Philosophical Transactions of the Royal Society of London,' and another proper portion under the title of the 'Proceedings of the Royal Society of London,' provided always that the President and Council shall have power to publish either papers or other matter in such form and under such conditions as they may from time to time determine.

III. At a meeting of the said Committee no less number than seven of the Members (of which number the President, or, in his absence, a Vice-President, shall always be one) shall be a quorum.

IV. The decisions of the Committee of Papers shall be determined by the majority of votes of those present and voting, and the voting shall be open, unless the President shall direct that the voting

shall be by ballot. In case of an equality of votes, the President shall have a second or casting vote.

The decisions of the Committee shall be duly entered in the Minute-book of the Committee.

V. The *Philosophical Transactions* and the *Proceedings* shall be printed at the sole charge, and for the use and benefit, of the Society, and of the Fellows thereof; to the intent that each of the present Fellows, who actually contributes and pays towards the support of the Society, or who has compounded for such contribution, according to the rules and orders established in relation thereto, or who has for other particular reasons been exonerated and discharged from such contribution by order of the Council, may receive *gratis* (but under proper limitations and restrictions) one copy of such of the *Philosophical Transactions* and of the *Proceedings* as shall be printed as aforesaid; and that all persons who shall hereafter be admitted Fellows shall, under the same conditions, receive, and be entitled to, the like benefit and advantage.

VI. The Assistant Secretary shall deliver *gratis* one of the said copies of the *Transactions* to every Fellow of the Society (except as hereinafter excepted) who shall demand the same, either in person, or by letter.

Provided always, that no Fellow whatsoever of the Society shall be entitled to demand or receive any such copy of the *Transactions*, whose election and payment of Admission fees and regular Contributions shall not have preceded the date of the time appointed for the delivery of the said *Transactions*; neither shall the Executor of any deceased Fellow receive a copy of the *Transactions* published after the death of such Fellow.

Provided also, that no Fellow of the Society shall receive, or be entitled to receive, *gratis*, any copy or copies of the *Transactions*, so printed as aforesaid, after five years shall have elapsed from the time of the Assistant Secretary's having begun to deliver out such copies respectively; but his neglecting to demand them for so long a time shall be deemed a forfeiture and dereliction of his right thereto: unless the Council for the time being, upon being made acquainted with the reason of such delay, and having regard to the circumstances of the application, and the amount of stock in hand, shall order such copies as they may think fit to be so delivered.

VII. The Assistant Secretary shall further cause to be distributed *gratis* to all the Fellows of the Society, by post or otherwise, copies of the *Proceedings* as soon as may be convenient after their appearance.

VIII. If the number of copies of *Transactions* and *Proceedings* so to be printed shall be greater than what will be requisite to supply each of the Fellows with one copy, such supernumerary copies shall be disposed of at such times, and in such manner, as the Council shall direct.

CHAPTER XIV.

Of the Books and Papers of the Society.

I. THERE shall be had and kept a Book, called the *Charter-book*, wherein shall be fairly written the copy of the Charters, all the Royal Grants on the behalf of the Society, and the Obligation to be subscribed by the Fellows of the Society in their own hand-writing.

II. There shall be kept a Book, called the *Statute-book*, wherein shall be fairly written, or printed, all the Laws, Statutes, and Constitutions made, or to be made, concerning the government and regulating of the Society or Council; and also a Register of the Fellows of the Society, with the times of their Election and Admission.

III. There shall be kept *Journal-books** of the Society, and also of the Council, wherein shall be entered all the minutes, orders, and business of the Society and Council at their respective meetings; to which *Journal-books* any Fellow may have access at such times as the Library is open.

IV. A Book shall be kept, in which the title of each communication received, the date of its reception at the apartments of the Society, and the name of the Fellow or Foreign Member who communicates it, shall be duly entered in the order of its reception.

V. The original copy of every Paper received at the Society shall be considered the property of the Society, if there be no previous engagement with its author to the contrary; but any author may withdraw a paper which has been received but not read; or may, by leave of the Council, have a copy of his paper; and it shall be in the power of the Council, if they think fit, to return to any author such drawings or other illustrations accompanying any paper communicated by him or on his behalf, which he may ask in writing to be returned to him.

* "The words 'Journal-books' do not include the Minute-books of the Government Grant Committee or those of the Government Grant Boards."—*Minute of Council*, May 24, 1894.

VI. All the Papers not withdrawn by leave of the Council, and read at the Society, shall be delivered to the Committee of Papers; and all Papers which have not been printed in the *Transactions* or *Proceedings* shall be preserved in the archives of the Society for future inspection; and shall never be lent out of the Society's House without Order of the Council.

VII. The Library shall be open to the Fellows every week-day (exclusive of Good Friday and Easter-eve, of Easter week, of a week at Whitsuntide, and of a week at Christmas), from 11 A.M. to 6 P.M., except on Saturdays, when it shall be open from Eleven in the morning to One in the afternoon; but during the months of August and September it shall be closed on week-days, other than Saturdays, at 4 p.m.

VIII. Any Fellow may have the loan of any of the printed Books of the Society, excepting such as the Council shall order not to be taken out of the Library; but he shall not be allowed to have in his possession more than ten volumes at a time. The loan of Manuscripts is exclusively vested in the President and Council.

IX. A List of all Books and Manuscripts borrowed from the Library of the Royal Society, and of the Fellows of the Society to whom they are lent, shall be kept in the Library.

X. All Books whatsoever belonging to the Society shall be returned at a time to be specified by the Council, in each year; and the Library shall be closed for one month after such time, or for such shorter periods as the Council may direct.

XI. The value of such Books in the possession of any Fellow as are not returned to the Library pursuant to the preceding Statute, shall be required to be paid by the person who has so detained them.

CHAPTER XV.

Of the Common Seal and Deeds.

I. THE Common Seal of the Society shall be kept in a box, the key of which shall be kept in a sealed packet. When the Common Seal has to be used, this packet shall be opened by the President in Council; and at the Council meeting at which it is so opened, the Common Seal having been replaced in the box, and the box locked, the key shall again be enclosed in a packet, which shall be sealed by

the President with his private seal. The box and sealed packet shall be kept at the Society's chambers in an iron safe.

II. Every Deed or writing, to which the Common Seal is to be affixed, shall be passed and sealed in Council.

CHAPTER XVI.

Of the Restraint of Dividends to Fellows.

THE Society shall not, and by its laws may not, make any Dividend, Gift, Division, or Bonus in Money unto or between any of its Members.

CHAPTER XVII.

Of the Making and Repealing of Laws.

I. FOR the making of any Law or Statute of the Royal Society, the draught thereof shall be read in Council, and put to the vote, on two several days of their meeting. The first day the question to be resolved by vote shall be to this effect, viz., "Whether the draught of the said Statute, then agreed upon, shall be read at another meeting?" The second day the question shall be to this effect, viz., "Whether the draught of the said Statute, then agreed upon, shall pass for a Law, or not?"

II. For the repealing of any Law or Statute, or any part thereof, the Repeal shall be proposed and voted in Council on two several days of their meeting. The first day the question to be resolved by Ballot shall be to this effect, viz., "Whether the Repeal of such a Statute, or such part thereof, shall be proposed at another meeting?" The second day the question shall be to this effect, viz., "Whether such a Statute, or such part thereof, shall be repealed, or not?" And in case the said Repeal be agreed unto, the same shall be recorded in the Journal-book of the Council; and the Statute, or part of the Statute, repealed, shall be cancelled in the Statute-book.

January 1, 1903.

STANDING ORDERS OF COUNCIL RELATING TO MEETINGS, SECTIONAL COMMITTEES, AND PUBLICATIONS.

(As amended Feb. 16th, 1899.)

NOTE.

By Statute 1, Cap. XIII, the consideration of the acceptance, reading, and publication of all papers communicated to the Society is referred to the Council sitting as Committee of Papers; and in the following Standing Orders the word "Council," when used in connection with the acceptance, reading, or publication of papers, is to be understood to mean the Council sitting as Committee of Papers.

I.*Relating to the Conduct of Ordinary Meetings.*

1. At each Ordinary Meeting, any formal business of the Society which may be necessary, such as the reading of certificates, balloting for candidates under Statutes, Cap. I, announcements, returning thanks for presents, &c., shall, unless the President direct otherwise, be the first business of the meeting.

2. At each Ordinary Meeting, not being "a Meeting for Discussion," as hereinafter provided, or for the Bakerian or the Croonian Lecture, the President shall determine what papers are to be read, and the order in which they shall be taken. He may also, whenever he sees fit, direct the author of a paper or one of the Secretaries to read an abstract of the paper or the paper itself, if it be sufficiently brief, or may invite the author to make an oral statement of the nature of its contents, and may also invite remarks upon the paper. When an oral statement is desired, the author shall, so far as possible, be previously informed of the fact. A paper shall be considered to have been "read" if one of the Secretaries has read its title only.

3. At any Ordinary Meeting, not being a "Meeting for Discussion," any Fellow of the Society may, with the approval of the President, and at such period of the Meeting as the President may determine, make a communication not of the nature of a "paper," or exhibit objects having relation to the advancement of Natural Knowledge.

4. The President shall further have power at any Ordinary Meeting, and at any period of that Meeting which he may think proper, to make such announcements or statements, as he may think desirable, relating to the advancement of Natural Knowledge.

5. In each year certain Ordinary Meetings, not more than four in number (exclusive of the Meetings set aside for the Bakerian and Croonian Lectures respectively), shall be devoted each to the hearing and consideration of some one important communication, or to the discussion of some important topic; these Meetings shall be termed "Meetings for Discussion."

6. The Council shall from time to time give due notice of the dates at which Meetings for Discussion will be held.

7. The Council, of its own motion, or upon the recommendation of a Sectional Committee, may select some communication made to the Society in the ordinary way, as the subject for such a Meeting for Discussion, or it may select for that purpose some question, the discussion of which would, in their judgment, be likely to advance Natural Knowledge. In the latter case, the Council shall appoint some person to open the discussion by means of a communication made by him for that purpose.

8. When a Meeting for Discussion has been arranged, the Council, or the Officers, shall direct printed copies of the communication which has been approved of for the said Meeting (or of an adequate abstract of it), to be sent not later than one week before the date of the Meeting, to each Fellow, or to certain Fellows of the Society, and to such other persons as the President may direct. And the Council shall take such other steps as may seem to it desirable to render the discussion useful towards the advancement of Natural Knowledge.

9. At each Meeting for Discussion, the conduct of the discussion shall be under the direction of the President, who shall arrange for the Fellows present and desiring to speak, and who shall have the power to invite, if he think fit, persons present, not Fellows of the Society, to take part in the discussion. Any Fellow shall be at liberty to send to the Secretaries, previous to the Meeting, written remarks on the communication which is the subject of the meeting, and the President shall, if he see fit, direct one or other of the Secretaries to read these remarks at the meeting.

II.

Relating to Sectional Committees.

10. The Council shall appoint, from among the Fellows of the Society, Committees representing the several branches of Natural Knowledge, and called "Sectional Committees." The Members of

each Committee shall be chosen with a view to secure, so far as is possible, a representation of the several sub-divisions of each branch of Natural Knowledge, and to obtain the assistance of Fellows who, from their connection with other societies, and otherwise, are specially qualified to advise the Council in respect to particular parts of Natural Knowledge.

11. It shall be the business of each Sectional Committee to advise the Council (whether sitting as the Committee of Papers or otherwise) or the Officers upon matters referred to it by the Council or by the Officers, and otherwise to make to the Council such suggestions as it may think desirable touching the branch or branches of Natural Knowledge which it represents, it being understood that no Sectional Committee shall offer advice to the Council as to the selection of candidates for admission into the Society as Fellows or Foreign Members, or as to the awards of Medals, unless the Council shall have asked for such advice.

12. The Council shall each year appoint a Member of each Committee to serve as Chairman of that Committee, and to be the channel of communication between the Committee and the Council or Officers.*

13. The Sectional Committees shall be six in number, viz. :—

- (1) A "Mathematics" Committee for Mathematics, Mathematical Physics, Crystallography, and Mathematical Astronomy.
- (2) A "Physics and Chemistry" Committee for Experimental Physics, Observational Astronomy, Meteorology, Chemistry, and Metallurgy.
- (3) A "Geology" Committee for Geology, Palæontology, Mineralogy, and Geography.
- (4) A "Botany" Committee for Botany.
- (5) A "Zoology" Committee for Zoology and Comparative Anatomy.
- (6) A "Physiology" Committee for (Animal) Physiology and Medical Subjects.

14. The "Mathematics" Committee shall consist of six Members, of whom two shall retire each year; three Members shall form a quorum.

The "Physics and Chemistry" Committee shall consist of twelve Members, of whom four shall retire each year; five Members shall form a quorum.

* By a resolution of Council of July, 1897, the Chairman of a Sectional Committee is authorised to appoint one of the Committee his Deputy when necessary.

The "Geology" Committee shall consist of nine Members, of whom three shall retire each year; four Members shall form a quorum.

The "Botany" Committee shall consist of nine Members, of whom three shall retire each year; four members shall form a quorum.

The "Zoology" Committee shall consist of nine Members, of whom three shall retire each year; four members shall form a quorum.

The "Physiology" Committee shall consist of twelve Members, of whom four shall retire each year; five members shall form a quorum.

15. Any Member of Council who desires to attend the meetings of any Sectional Committee, of which he is not at the time being a Member, shall have power to do so as *amicus curiæ* under the following conditions. Upon his expressing in writing to the Assistant Secretary his wish so to attend, the summons for each meeting of the Committee shall be sent to him as to an ordinary Member of the Committee during his tenure of office as Member of Council, or during such shorter time as he may name; but the Chairman of the Committee shall not be expected to correspond with him as with an ordinary Member of Committee. He may with the consent of the Chairman speak during the deliberations of the Committee, but shall give no vote.

16. It shall be in the power of the Council to add to the number of any Committee, if at any time it may seem to be desirable to do so.

(The following Standing Orders, 17—28, are the same for each Sectional Committee.)

17. The retirement of Members shall be determined by seniority.

18. The retiring Members of the Committee shall each year vacate office on the 31st of December, and shall not be eligible for election for the ensuing year.

19. Should, by reason of death or otherwise, a vacancy occur at any intermediate time, the Council shall appoint a person to fill the vacancy, and the retirement of the person so appointed shall be according to the rules which would have applied to the Member whose place he fills, provided that, if at the date of retirement the said person has not served more than one year, he shall be eligible for immediate re-appointment.

20. The appointment of the Fellows to serve as new Members of Committee shall be made by the Council in December, and the Members so appointed shall enter office upon the 1st of January ensuing.

21. The Committee shall, when necessary, meet in the apartments of the Society at some convenient hour on the second Thursday in each month from October to July, both included, or at such other times and places as the Chairman may determine.

22. The summonses for a meeting shall be issued by the Assistant Secretary at the direction of the Chairman.

23. The decisions arrived at by a meeting of a Committee at which the Members present do not form a quorum shall be valid, if subsequently agreed to in writing by not less than two-thirds of the whole Committee.

24. Voting shall be open, unless any Member of the Committee shall demand the ballot. The Chairman shall have a second or casting vote.

25. The Minutes of the Committee shall be duly recorded in a book kept for that purpose, and preserved in the apartments of the Society, or in the custody of the Chairman, together with such correspondence and documents relating to the business of the Committee as the Committee may think it desirable to preserve.

26. The Committee shall make to the Council, through its Chairman, who shall be provided by the Society with such clerky assistance as he may need, reports to the Council, answers to inquiries of the Council, and such suggestions as the Committee may think desirable. The minutes of the Committee shall be laid before the Council whenever the Council shall so demand.

27. When a Committee is of opinion that a paper referred to it might profitably serve as the basis of a discussion at a meeting of the Society, it shall forthwith report to that effect to the Council. If the matter seem urgent, the President and Officers shall have power, without waiting for a Meeting of the Council, to take immediate steps towards carrying out the recommendations of the Committee.

28. Should, at any time, a Committee be of opinion that it would be desirable to encourage a discussion at a meeting of the Society upon some subject, concerning which no paper suitable to serve as a basis for discussion is under its consideration, and have ascertained that some person is willing to prepare a suitable paper for that purpose, the Committee, having approved of the said paper, shall recommend it to the Council, to be treated as the basis of a discussion to be held at some convenient meeting.

III.

Relating to the Acceptance, Reading, and Publication of Papers.

29. Upon a communicated paper reaching the apartments of the Society, the Assistant Secretary shall mark on it the date of the

reception, shall record the reception in the book kept for that and other purposes relating to papers received, and shall report the reception to the one or the other of the two Secretaries, according to the nature of the communication.

30. The Secretary to whom the paper is thus reported shall, if he sees fit, of himself, or after consultation with the other Officers or with the Chairman of the appropriate Sectional Committee, direct the paper to be marked as "accepted for consideration," otherwise he shall refer the question of acceptance for consideration to the appropriate Chairman of Sectional Committee, who shall at a meeting of his Committee, or by correspondence with its Members, obtain the view of the Committee thereupon, and report the same to the Secretary, who shall act on the advice so given.

31. In the case of a paper not being accepted for consideration, the Fellow communicating the paper shall be informed thereof, but the paper itself shall remain the property of the Society, provided always that such Fellow may, with the consent of the Council, withdraw the said paper, upon the understanding expressed in writing that the paper is to be regarded as not having been communicated to the Society at all.

As to the 'Proceedings.'

32. In the case of a paper being accepted for consideration, the author shall be required to furnish, if he has not already done so, a short account of the main points of the paper, hereinafter called an "abstract," of such length and nature as shall be approved of by the Secretaries; provided that if the paper do not exceed in length about twelve pages of the 'Proceedings' (such a paper being hereinafter called a "short" paper), an abstract of it shall not be required.

33. In the case of a paper accepted for consideration, and of which when required an abstract has been furnished, the Secretaries shall proceed to make arrangements for the reading of the paper, and shall, if they think fit, of themselves, or after consultation with the Chairman of the appropriate Sectional Committee, mark the abstract or short paper as suitable for publication in the 'Proceedings'; otherwise they shall refer the question of publication of the abstract, or in the case of a short paper, of the paper itself, to the Chairman of the appropriate Sectional Committee, who shall, either at a meeting of the Committee, or by correspondence with its Members, obtain the view of the Committee thereupon, and report the same to the Secretaries, who shall act upon the advice so given.

34. In all cases where the Secretaries have, as regards the acceptance or reading of any paper, or the publication of any abstract or

paper, acted under Standing Order 30, or 33, of themselves, or after consultation with a Chairman of Committee only, the Committee itself not having been formally consulted in the matter, such action shall be reported to the Committee.

35. When a paper has been accepted for consideration, and appointed to be read, the author shall be informed of the meeting at which it is appointed to be read, and shall be supplied with a copy of Standing Order 2. In cases where the President or Secretaries, after consultation (if they see fit) with the appropriate Sectional Committee or its Chairman, are of opinion that at the meeting the author of the paper should be invited to make an oral statement, or that the abstract (or short paper) prepared for publication in the 'Proceedings' should be read, the author shall be informed of the fact, and be invited to be present.

36. Abstracts of papers, or short papers in full, which have been marked as suitable for publication in the 'Proceedings,' shall be set up in type without delay, and proofs submitted to authors for correction.

37. The 'Proceedings' of the Royal Society shall be published in numbers which shall be issued at as short intervals as may be found suitable, and shall contain:—

- i. In reference to each meeting, a record of the formal business conducted at the meeting, the titles of the papers read at the meeting, and such an account of other communications made at the meeting or of other proceedings, not of the nature of business or of discussions on the papers read, as the President and Officers may judge it desirable to insert.
- ii. Such abstracts of papers or such short papers ordered for publication in the 'Proceedings,' as may be ready to be published.
- iii. Such papers, not of the nature of short papers, or such other matter as the Council may, in special cases, order to be published in the 'Proceedings.'

38. The Secretaries shall take what means they may think proper to secure that the account given in the 'Proceedings' of any communication made at a meeting besides the papers read, or of anything which occurred and seemed worthy of being recorded, shall be accurate; and if, from anything which takes place at a meeting, they should have reason to think that the Sectional Committee might wish, in respect to any paper, to reconsider the recommendation that it should be published, they shall have power to postpone the publication of that abstract or paper, and refer the abstract or paper once more to the Sectional Committee.

39. The account given in the 'Proceedings' of a "Meeting for Discussion" shall contain the communication made for the purpose of

opening the discussion (Standing Order 7), as well as such contributions to the discussion received in writing previous to meeting (Standing Order 9) as the respective authors may desire to see so published, provided always that all such communications are subject to the General Standing Orders relating to the publication of papers in the 'Proceedings.' There shall be no report of the discussion itself.

As to the 'Philosophical Transactions.'

40. Every paper communicated to the Society, and accepted for consideration, shall be referred by the Secretaries to the appropriate Sectional Committee through the Chairman of that Committee, provided always that, for the better expedition of the business of the Society, the Secretaries, as provided above (Standing Orders 33 and 36), shall have power, in the case of short papers, to proceed with the reading and publication of a paper previous to its having been considered by a Committee. If the said Chairman is of opinion that the subject of the paper does not lie within the scope of his Committee, he shall report the same to the Secretaries, who shall refer the paper to some other Sectional Committee. Should the Secretaries be of opinion that a paper pertains by its subject to more than one Sectional Committee they shall take steps in order that the judgment of the several Committees concerned may be obtained. In the case of any difficulty as to the reference of a paper to its appropriate Sectional Committee or Committees, the Secretaries shall bring the matter before the Council.

41. The Chairman through whom the paper is referred shall bring the paper under the consideration of his Committee at the next regular meeting of the Committee, or at some earlier meeting which he may think it desirable to call, having in the meanwhile, if he and one or other of the Secretaries judge it desirable, submitted the paper to one or more Members of the Committee, or Fellows of the Society not Members of the Committee, whose opinion or opinions he shall report to the Committee.

The Sectional Committee, for its guidance in judging a paper so brought before it, shall obtain from at least two persons—who are knowing and well skilled in the particular branch of Natural Knowledge to which the said paper relates, and who may or may not be Members of the Committee, but, unless there be special reasons to the contrary, must be Fellows of the Society—acting as referees, opinions in writing upon the following points, viz. :—

- i. Whether the paper should or should not be published in the 'Philosophical Transactions' ;
- ii. Whether, in the former case, it should be published in full or in part only, the part so to be published being indicated ;

- iii. Whether any modifications are necessary or desirable, and, if so, of what nature ;
- iv. Which illustrations (if any) accompanying the paper should be reproduced.

Having obtained and considered such written opinions, and having, if it see fit, consulted another Sectional Committee or others of the Sectional Committees, and having at a meeting (in accordance with Standing Orders 23, 24) decided upon the above points, it shall embody its decisions, together with any other recommendations which it may think fit to make in reference to the paper, in a Report to the Council, signed by the Chairman, to which Report shall be appended, for inspection by the Council, the written opinions of the Referees.

42. The Sectional Committee, in thus deciding upon a paper, shall be guided by the principle that such a paper only should be recommended for the 'Philosophical Transactions' as appears to mark a distinct step in the advancement of Natural Knowledge.

43. If the Council approves of the Report of the Sectional Committee, the Secretaries shall immediately take action with regard to the publication of the paper, in accordance with the Report. If the Council does not approve of the report of the Sectional Committee, it shall request the Sectional Committee to reconsider its recommendations, and shall not come to a decision until it has received the further report of the Sectional Committee. But, for the better expedition of the business of the Society, the Secretaries, in such cases as they judge fit, shall have power to take steps with regard to the publication of a paper in the 'Philosophical Transactions,' in accordance with the decision of a Sectional Committee, previous to that decision having been brought before the Council; and they shall also have power, in cases in which they and the Chairman of the appropriate Sectional Committee agree in thinking it desirable, to take such steps as they may think fit with regard to the publication of a paper in the 'Philosophical Transactions,' previous to a formal decision of the said Committee upon the paper having been taken.

44. In the case of the Chairman of a Sectional Committee being the author of a paper referred to that Committee, the Secretaries shall have power, in consultation with some member or members of the Committee, other than the Chairman, to take the same action as under the foregoing Standing Orders they are empowered to take in consultation with the Chairman.

45. Each paper ordered for publication in the 'Philosophical Transactions' by the Council shall be published separately in paper covers, the date at which it is issued being marked on the cover, and shall be sold separately.

46. The several papers shall also be issued bound in two series—A, containing those papers which are of a mathematical or physical character, and B, containing those of a biological character—at intervals, so far as possible regular, and of not too great a length; no paper being kept back more than six months from the date of its publication as a separate paper.

47. In the case of communications received in the Christmas, the Easter, or the Midsummer recess, the Secretaries shall have power, with the approval of the Chairman or Chairmen of the appropriate Sectional Committee or Committees, to issue a number or numbers of the 'Proceedings' containing such communications, without waiting for their being read at a meeting of the Society.

48. When the Council or the Society has appointed a person, or two or more persons acting as Committee, to carry out a particular inquiry, and the person or Committee has presented a report giving an account of such inquiry, the Council, having consulted the appropriate Sectional Committee or Committees in the usual way as in the case of a paper presented, shall direct the report, if deemed worthy of publication, to be published either in the 'Proceedings,' as a separate number if this should seem convenient, or in the 'Transactions,' according as the one or the other may seem the more suitable for the purpose.

49. A Year-book of the Society shall be published annually, so soon after the Anniversary Meeting as shall be convenient.

IV.

RELATING TO THE COMMITTEE OF PAPERS.

50. The Minutes of the Council sitting as Committee of Papers shall be kept separately from the ordinary Minutes of Council.

51. At each meeting of the Committee, the Secretary shall lay before the Committee a statement of the papers under consideration, showing briefly in the case of each paper the action which has been taken in regard to it, and the recommendations which may have been made concerning it by a Sectional Committee, together with, in the case of a paper recommended for publication in the 'Philosophical Transactions,' an approximate estimate of the cost of publication. Such a statement, or so much of it as is possible, shall be printed and distributed to the Members of the Committee previous to the meeting.

52. At each Meeting of the Committee the written decisions of the Sectional Committees, and the reports of referees, which may have been made in respect to papers mentioned in the Statement, shall be laid upon the table.

53. The Committee may, if it see fit, adopt *en bloc* all the recommendations contained in a Statement, provided always that if any Member of the Committee, either personally or, if absent, by writing, object to any particular recommendation or recommendations, such recommendation or recommendations shall be considered separately, the remainder being treated *en bloc*.

54. The decisions of the Committee on all questions before it shall be by the majority of those present and voting, the voting being open unless any member demand a ballot, in which case the voting shall be by ballot.

EXPLANATORY NOTES ON THE PROCEDURE RELATING TO THE READING AND PUBLICATION OF PAPERS.

1. No paper is received by the Society unless it be communicated by a Fellow. A Fellow, in communicating a paper, is required by Statute to ascertain that the paper is a fit and proper one to be communicated; he should satisfy himself not only that the paper is by its nature so fit, but also that it has not previously been published elsewhere.

A Fellow, in communicating a paper, should state whether he (or the author) desires that it should be published in the 'Proceedings' or in the 'Transactions.' In the former case, the Fellow communicating should see that the paper does not exceed in length about twelve pages of 'Proceedings,' and is not accompanied by elaborate illustrations; in the latter case, a short abstract of the main points of the communication must accompany the full paper. Since the MS. of a communication received and read, but not published by the Society, is retained in the possession of the Society,* an author is recommended not to send in the sole copy of his MS.; and it is advisable that the copy sent to the Society should be type-written, and, if possible, on a foolscap page.

It will be also convenient if, at the time of sending in the paper, the Assistant Secretary is informed what days of meeting will best suit the author for the reading, supposing it be decided that the paper should be read, and whether he wishes to be present, and whether he is prepared to illustrate the reading of the paper by experiments, projection slides, diagrams, &c. The Society cannot, however, undertake always to fix the reading of the paper on the day or even one of the days proposed by the author.

* While retaining a MS. not ordered for publication, the Council are generally willing to return to the author drawings, &c., illustrating the paper.

2. When a communication has been "received," the first decision taken with regard to it is whether it should be "accepted for consideration." (Standing Order 30.)

If it be not accepted for consideration, the Fellow communicating the paper is informed of this, and he may, under certain conditions, withdraw the paper. (Standing Order 31.)

3. If it be accepted, the next decision relates to the reading of the paper.

According to the nature of the paper, and according to circumstances, the reading may consist of the title only being read by one of the Secretaries, or the paper may be read in whole or in part by one of the Secretaries, or the author may be invited to give an oral exposition of the contents of his paper, with such experimental or other illustrations as he may desire.

A decision having been come to as to the date of the reading, this will be communicated to the author, who, according to the decision taken, will be invited to be present, and may be requested to give an oral exposition.

4. When a paper has been judged suitable for publication in the 'Proceedings,' it is without delay set up in type, so that, if possible, printed copies may be in the hands of Fellows at the meeting at which the paper is read. A proof of the paper is sent to the author with the request that he will revise the proof as carefully as possible, and return it to the Assistant Secretary as soon as possible.

It may be found desirable to set up in type and even distribute at a meeting a paper which has been marked for reading, but about the publication of which no decision has as yet been come to. Hence, receipt of the proof must not be considered by the author as an indication that the paper will certainly be published.

5. If the author, in revising the proof thus sent to him, be led to make other than verbal or unimportant corrections, or to make additions, he must, in view of the publication of the paper, carefully date all such important corrections or additions. Any such corrections or additions introduced into any subsequent revise of the paper must be similarly dated.

A paper, when published, bears on it the date of reception of the MS.; this may be used in claims of priority, and the rule just given about dating corrections and additions is intended to prevent the author claiming the date of the reception of the MS. for important statements introduced into the paper after that date.

6. An author can, if time permits, receive, on application to the Assistant Secretary, any reasonable number of copies of the proof of his paper, corrected so far as is possible, in order that if he so wishes he may send, before the meeting at which the paper is read, copies of

the proof to persons likely to take part in any discussion which may follow the reading of the paper. The Society leaves to the individual author the responsibility of thus making known the results of his labours before the account of those results is formally read; so far as the Society itself is concerned, a paper communicated to it is regarded as private until it has been read.

7. When a paper has been ordered for publication in the 'Proceedings' and read, it is desirable to avoid everything which would delay its publication. Hence an author should correct the first proof of his paper so carefully that he does not need to see a second proof or revise. It will frequently, however, be found desirable for the author to see such a revise after the paper has been read. It is most important that the corrections then made should be final, and should be made without delay. A demand for still another revise, or any delay in returning that revise, is nearly sure to prevent the paper appearing in the particular number of the 'Proceedings' which gives an account of the meeting at which the paper was read.

8. Editors of periodicals are often anxious to obtain copies of the papers read before the Society, in order that they may publish them, in whole or in part, in their own periodicals, without waiting for the appearance of the papers in the 'Proceedings' of the Society. The Society offers no objection to this practice, provided that the copy sent to the periodical is identical with the paper as it will appear in the 'Proceedings.' For this reason the Society keeps the distribution of such copies in its own hands, and does not entrust it to the authors. Otherwise, the Society would have no guarantee against the following accidents, which, indeed, previous to the present arrangements having been made, did actually occur. If it were left to the author, he might send to a periodical an early proof of a paper which, before it was ordered for publication, needed large amendment, so that the paper, as it appeared in the said periodical, might differ widely from the paper as it appeared in the 'Proceedings.' Again, since a paper ordered for reading is, for the convenience of Fellows attending the meeting at which the paper is read, usually set up in type without delay, and may be, indeed often is, so set up before it has been decided to publish the paper, it might happen (and, indeed, has happened) that an author sent to a periodical a copy of a paper as if it were about to appear in the 'Proceedings,' and yet that paper never so appeared. To avoid such undesirable occurrences, the following practice has been adopted. With the proofs of his paper the author receives a form to fill up, stating to what periodicals he wishes separate copies of his paper, *so soon as it is finally passed for press*, to be sent, and the Society distributes the copies according

to the list returned. The form sent to the author contains the titles of several periodicals to which separate copies will be sent on his returning the form with his signature attached. The author can modify the list as he wishes, striking out from or adding to it.

9. When a paper is printed off for the 'Proceedings' the author is entitled to receive gratis 100 separate copies; he can have 150 additional separate copies at cost price.

10. One object of the regulations just described is to enable the Secretaries to publish as quickly as possible the papers (including abstracts) ordered for publication in the 'Proceedings,' and, save in special cases, the deliberations necessary for ordering these to be published do not take a long time.

Any decision as to publishing a paper in the 'Philosophical Transactions' necessarily takes a longer time, since the responsibility of this rests with the Sectional Committee or Committees and the Council, no such freedom of action being given to the Secretaries and Chairmen of Committees as is given in the case of papers published in the 'Proceedings.' The author, however, may greatly help to shorten the interval between the reception of a paper and its publication in the 'Philosophical Transactions' by attending to the following matters:—

(1) The MS. should be, if possible, type-written, or at least written in a legible hand, and *properly prepared as copy for press*, so that the subsequent corrections in spelling, grammar, construction of sentences, references, &c., may be as few as possible.

(2) When the paper is accompanied by illustrations, these should be sent in *ready for reproduction*. Figures, for instance, for which a "process" can be used, should be supplied in a condition in which the process may be directly applied; figures intended to be lithographed should be properly arranged as Plates of the proper size, and so on.

(3) When the author is requested to make changes or additions to his paper before it is published, these should be made without delay; the tardy appearance of papers in the 'Philosophical Transactions' has often been due to delay of this kind on the part of the author.

PROCEDURE IN THE NOMINATION OF THE COUNCIL.*

1. The subject of the new Council shall be taken into consideration at a Meeting of Council to be held on the last Thursday of October; and with the summons for that Meeting there shall be transmitted a

* From Minutes of Council, June 20, 1872.

list of the Members of the existing Council, with the number of their attendances at Meetings up to that date ; also a List of the Fellows of the Society, with an indication of those who have at any time served on the Council, and the dates of their service.

2. At this Meeting the names of those Members of the existing Council who retire at the ensuing Anniversary shall be determined. Thereafter each Member present shall hand to one of the Secretaries a List of not exceeding ten Fellows whom he proposes for the new Council, of whom five shall not have already served on the Council. Members not able to be present may send in similar lists previous to the Meeting. The several lists of names so proposed shall then be read out by the Secretary.

3. Before the next following Meeting, the President and Officers shall prepare a list of twenty-one names for consideration by the Council, which list shall include ten names selected from those proposed at the previous Meeting, or other names, if required to make up that number. The list so prepared, together with a statement of the names proposed, and the number of votes given for each, shall be sent out confidentially with the summons for the ensuing Meeting, at which Meeting the names to be finally recommended shall be balloted for. In taking the ballot, a copy of the list, prepared by the Officers, shall, with such alterations as he may see fit to make therein, be delivered by each Member of the Council present and voting, and the names found to have the majority of votes shall form the list to be recommended to the Society.

4. The President and Council shall then nominate by ballot, out of the proposed Council, the persons whom they recommend to the Society for election to the offices of President, Treasurer, Principal Secretaries, and Foreign Secretary, for the ensuing year.

PROCEDURE OF THE COUNCIL IN THE NOMINATION OF FOREIGN MEMBERS.

(Statutes, Cap. I, §§ XX—XXII.)

XX. "A book shall be kept in which Members of the Council may enter the names of those men of science whom they suggest as Foreign Members ; each entry shall be signed by the proposer, and be accompanied by a short statement of the principal grounds on which the suggestion is made, and shall be valid for three years only.

XXI. "When vacancies are to be filled up, a list of the persons so entered shall be sent to each member of the Council, together

with notice of the Meeting at which the list will be considered. At the Meeting thus appointed further entries may be made, and the claims of those men of science whose names have been duly entered in the book shall be considered, and a selection of names shall be made, from among which the Council, at a subsequent Meeting to be then appointed, may make nominations to the Society.

XXII. "At the second Meeting the selection of the Candidates to be nominated shall be by ballot; when, if two-thirds of the Members of the Council present be in favour of the nomination of any Candidate, he shall be proposed at the next Ordinary Meeting of the Society, and shall be put to the vote at the following Ordinary Meeting."

PROCEDURE OF THE COUNCIL IN THE ADJUDICATION OF THE MEDALS.

1. At the first Meeting on the subject of the Medals, the Members of Council are invited to *suggest* a name, or names, which they may deem worthy of consideration in the adjudication of each of the several Medals. The list of suggested names then formed to be entered on the Minutes, with power to Members of Council to add to it afterwards, if they see fit.

2. At a subsequent Meeting (or Meetings), to be held before the Midsummer Recess (at which additions may be made to the List of suggestions), every Member of the Council present is at liberty to *propose* for each Medal the name of a person whom he recommends to be selected to receive it, specifying the particular work or works which form the ground of his recommendation; and these proposals, being seconded, shall be entered on the Minutes. At the same time the proposer is expected to deposit with one of the Secretaries a detailed statement of the claims of the person recommended by him, for consultation by Members of the Council, should they so desire.

3. The Council to be summoned on the last Thursday of October, for the purpose of discussing the merits, as regards the award of the Medals of the persons severally proposed. Additional proposals may be made at this Meeting, if assented to by two-thirds of the Members present.

4. The Council to meet for further consideration of the proposals on the first Thursday in November; the awards to be decided either on that day or at an early adjourned Meeting.

CONDITIONS OF AWARD OF THE ROYAL SOCIETY'S MEDALS.

THE COPLEY MEDAL

is awarded to the living author of such philosophical research, either published or communicated to the Society, as may appear to the Council to be deserving of that honour. The subject or subjects of research, on account of which the medal is awarded, must be specified in making the award.

No limitation is imposed either as to the period of time within which that research was made, or to the particular country to which its author may belong.

The medal may not be awarded to any person who is a Member of the Council at the time when the award is made.

The medal may be given more than once to the same person if the Council deem it expedient.

The medal is, as far as circumstances admit, awarded annually.

THE RUMFORD MEDAL,

consisting of a gold medal with a silver copy struck in the same die, is awarded once every second year "to the author of the most important discovery or useful improvement which shall be made and published by printing or in any way made known to the public in any part of Europe during the preceding two years on Heat or on Light, the preference always being given to such discoveries as, in the opinion of the President and Council of the Royal Society, tend most to promote the good of mankind.

"If during any term of years from the last award no new discovery or improvement shall have been made in any part of Europe relative to Light or Heat; in the opinion of the President and Council of sufficient importance to deserve the award, it may not be given, but the value of it may be reserved, and being laid out in the purchase of additional stock may augment the capital; and the interest of the same, by which the capital may from time to time be so augmented, may be given in money" at a subsequent award with the two medals.

THE ROYAL MEDALS,

consisting each of a gold medal with a silver copy struck in the same die, are awarded annually by the Sovereign upon the recommendation of the Council, for the two most important contributions to the advancement of Natural Knowledge, published originally in His Majesty's dominions within a period of not more than ten years, and of not less than one year of the date of the award.

In the award of the Royal Medals one is given in each year to each of the two great divisions of Natural Knowledge.

THE DAVY MEDAL

is awarded annually for the most important discovery in Chemistry made in Europe or Anglo-America.

THE DARWIN MEDAL,

which is accompanied by a grant of £100, is given biennially in reward of work of acknowledged distinction (especially in Biology) in the field in which Mr. Darwin himself laboured. The award may be made either to a British subject or a foreigner, and without distinction of sex.

THE BUCHANAN MEDAL,

which is accompanied by a grant of the balance of the Buchanan Medal Fund which may have accumulated since the last award, is awarded every five years in respect of distinguished services to Hygienic Science or Practice in the direction either of original research or of professional, administrative, or constructive work, without limit of nationality or sex.

THE SYLVESTER MEDAL,

which is accompanied by a grant of the balance of the income of the Sylvester Medal Fund, is awarded triennially for the encouragement of Mathematical Research, irrespective of nationality.

HUGHES MEDAL.

Under the will of the late Professor E. E. Hughes, the Society has received a bequest, which will be applied to the award of a medal on the following conditions:—

1. A Gold Medal, to be called "The Hughes Medal," bearing a bust of the donor, and not exceeding in value the sum of £20, shall be awarded annually, together with the balance of the income of the Fund, to such person as the President and Council may consider the most worthy recipient, without restriction of sex or nationality, as the reward of original discovery in the Physical Sciences, particularly electricity and magnetism or their applications, such discovery or applications having been published not less than one year before the award.

2. If in any year the Council do not see fit to award the medal, owing to no one being deemed sufficiently worthy of it, the income for that year shall be invested and added to the principal of the Fund.

THE MACKINNON RESEARCH STUDENTSHIP.

Under the will of the late Sir William Mackinnon the Society has received a bequest to be applied to the foundation and endowment of

prizes or scholarships for the purpose of "furthering Natural and Physical Science, including Geology and Astronomy, and of furthering original research and investigation in Pathology," and the following regulations have been drawn up for the administration of the Trust:—

(1) A Studentship of the present annual value of £150 shall be offered, under the name of "The Mackinnon Research Studentship."

(2) The award shall be made by the Council on the recommendation of a Committee to be appointed by the Council.

(3) The Studentship shall in every case be awarded for one year, but shall be renewable for a second year on the recommendation of the Committee after consideration of a report from the student upon his first year's work.

(4) The Studentship shall be awarded, so far as possible, alternately, for investigations in the two main divisions of Science corresponding to the two series (A and B) of the 'Philosophical Transactions,' but not including Mathematics.

(5) Applications for the Studentship shall be invited by some mode of public announcement, to be hereafter determined, the terms of the announcement making reference to the conditions of the Bequest, the division of Science in which the last awarded Studentship has been held, and to the fact that preference will be given to a student of the alternate division.

(6) Candidates shall be required to state whether they hold other endowments, and the Committee shall have power to make inquiry into and take into account the other resources of the candidates.

(7) The research for which the Studentship is awarded shall be carried out only at a place approved by the Council, but the student shall not be allowed to carry on other work without the approval of the Council.

(8) The award shall be made always before the end of the Summer term, and the first award shall be made in the Summer of 1901.

(9) In the event of a Studentship not being awarded, or from any cause lapsing before the expiry of the term for which it is granted, the unexpended income of the fund shall be invested so as to be available for extraordinary expenditure in furtherance of the general objects of the Bequest.

(10) The Studentship shall be restricted to British subjects.

REGULATIONS FOR ADMINISTERING THE GUNNING FUND.

A statement of the foundation will be found in the Account of the Society's Trusts, in the 'Record.' The regulations for its administration, proposed by the Council, March 14, 1895, and adopted by the Founder, May 16, 1895, are here subjoined.

REGULATIONS.

1. That the Fund should not be applied in the form of a prize, medal, or reward, but should be devoted to the furtherance of knowledge in some special direction.

2. That, by preference, the interest accruing from the Fund during every three years be applied for the promotion of Physical Science and of Biology alternately.

3. That aid should, by preference, thus be given in Physical Science and Biology respectively, either to investigations or operations which require to be repeated from time to time, or to the development of some specified continued line of research.

In illustration of Regulation 3, the Council suggested as follows:—
"Among subjects that would thus seem fitting for the application of the Fund, the following might be given as instances:—The renewal from time to time of magnetic observations in the British Isles; the compilation and publication, at intervals, of detailed lists of well-authenticated spectra; systematic determination of biological data in special regions or under special conditions; assistance to naturalists or others carrying on explorations or special investigations in foreign countries; continued bacteriological observations, similar to those carried out under the direction of the Water Research Committee and others."

REGULATIONS FOR ADMINISTERING THE JOULE FUND.

(Council Minutes, March 14, 1893.)

1. That the proceeds be applied in the form of a Studentship or Grant, to be awarded every other year, to assist Research, especially among younger men, in those branches of Physical Science more immediately connected with Joule's work.

2. That this Grant be International in its character, and awarded alternately in Great Britain and abroad, or in such order as the President and Council shall from time to time decide.

3. That it be awarded in Great Britain by the President and Council of the Royal Society; and, for award in France, offered to the "Académie des Sciences," Paris; and in Germany, to the "K

Akademie der Wissenschaften," Berlin; or, in any other country, to the leading scientific institution, for award in that country.

4. That the award in Great Britain be made on the recommendation of a Committee, from time to time appointed by the President and Council of the Royal Society, but not of necessity confined to Fellows of the Society.

PUBLICATION GRANT REGULATIONS.

(Council Minutes, June 15, 1899.)

Amended November 7, 1901.

The following regulations for the administration of the Publication Grant from H.M. Treasury have been adopted by the Council :—

REGULATIONS FOR THE ADMINISTRATION OF THE GOVERNMENT PUBLICATION GRANT.

I. The allotment of the Grant shall be made by the President and Council.

II. In allotting the Grant, the President and Council shall "assist not merely their own publications, but also the adequate publication of scientific matter through other channels and in other ways."

III. In making allotments for the purpose of assisting the adequate publication of scientific matter other than the Society's own publications—

1. The President and Council shall consider—

(i.) Proposals made by Members of the Council.

(ii.) Applications made by other Scientific Societies through the usual official channels.

2. Proposals made by Members of the Council may be so made at any meeting of the Council, and applications by other scientific societies shall be reported by the Secretaries to the Council at the first Council Meeting after they have been received; but unless the Council, on grounds of urgency, shall otherwise order, no proposal or application shall be taken into consideration except at the meetings of the Council held in January and July, and no allotment shall be finally decided upon at the first of the said meetings if the decision can conveniently be postponed to the second of the said meetings.

3. Original memoirs shall be considered as having a first claim on the Grant, the aid being given towards the expense either of illustrations or of press-work; but the President and Council shall have power, if they see fit, to make an allotment in aid of other publications which tend to the advancement of natural knowledge, such as reports, abstracts, &c.

4. No decision of the President and Council at any one meeting of the Council, to allot a portion of the Grant shall be valid unless

receives the support of three-fourths of the members present and voting; but the decision of a simple majority at any one meeting shall be made valid if confirmed by a majority at a subsequent meeting.

IV. The balance of the Grant remaining over at the close of the financial year, after deducting the amounts allotted under Section III, shall be placed to the credit of the General Funds of the Society, to assist in the production of the Society's own publications, unless the President and Council shall otherwise order.

REGULATIONS FOR ADMINISTERING THE SCIENTIFIC RELIEF FUND.*

The history of the Scientific Relief Fund will be found in the account of the Society's Trusts contained in the "Record." The following are the Regulations at present in force:—

REGULATIONS.

1. There shall be a fund called The Scientific Relief Fund, and the object of it shall be to aid such scientific men, or their families, as may from time to time require assistance.
2. All contributions to the fund shall be invested in the name of the Royal Society in such funds as are authorised for investment by Trustees; and in such manner as to form a separate account from that of the Society's other funded property.
3. The fund shall be administered by a Committee, called The Scientific Relief Committee, which shall consist of ten Fellows of the Royal Society, and it shall be the duty of such Committee to select the recipients on whose behalf the income derived from the fund may be properly applied—always reporting thereon to the Council for confirmation.
4. The capital of the Fund shall remain entire, and the interest only shall be at the disposal of the Committee.
5. If the whole of the interest shall not be expended in one year, the surplus shall be carried to the next year's account; and, if at any time any surplus in excess of the ordinary income of the year last past shall thus accrue, the Council shall cause the whole, or part of it, to be added to the capital sum already invested; or, should they think fit, may cause any accumulated interest to be invested as unexpended income, the securities purchased being liable from time to time to be realised, and the proceeds expended as income.

* Mainly codified from the Original Regulations adopted by the Council Nov. 3, 1859 (see also Minutes of May 26, 1859), and subsequent modifications passed by the Council on Dec. 22, 1859, Jan. 18, 1866, April 30, 1891, Jan. 19, 1893, April 30, 1896, Nov. 5, 1896.

6. No application for relief shall be entertained except on the recommendation of the President of one of the following Scientific Societies:—The Chemical, Entomological, Geological, Linnean, London Mathematical, Physical, Royal, Royal Astronomical, Royal Geographical, Royal Meteorological, Royal Irish Academy, Royal Society of Edinburgh, Society of Antiquaries, or Zoological Society; it being understood that the several Presidents will consult their respective Councils as to the persons whom they intend to recommend for relief.
7. The members of the Committee shall be appointed by the Council, and shall consist of ten members, each of whom shall serve for five years, so that two retire annually, and be not eligible for re-appointment on the occasion of their retiring. Should a vacancy occur by reason of death or otherwise, at any intermediate time, the Council shall appoint a person to fill the vacancy, and the person so appointed shall retire at the time the member whose place he fills would have retired had he continued until then to be a member, but if he have not served more than two years shall be eligible for re-appointment.
8. The Council shall annually appoint a member of the Committee to act as Chairman for the ensuing year. The Chairman shall have power to nominate one of the Committee to act as his deputy.
9. The Chairman, or his deputy, shall have power to summon a meeting of the Committee at his discretion, and shall fix the time of such meeting.
10. Three of the Committee shall form a quorum.
11. The Treasurer of the Society shall have power, on the requisition of the Chairman of the Committee, or of his deputy, made in pursuance of a resolution of the Committee, but subject, nevertheless, to the provisions of Regulation 12, to make payments out of the Scientific Relief Fund not exceeding £100 in any one case, reporting such action to the Council at its next meeting.
12. The Chairman, or his deputy, shall, notwithstanding Regulation 6, have power to act in urgent cases during vacations of the Society, after consultation with one of the Secretaries of the Society, without calling the Committee together. In such cases the Chairman shall, after the vacation, summon a meeting of the Committee and report his action.

In the first Report of the Committee, dated November 30, 1864, it is stated that "It formed no part of the scheme to attempt the grant of annuities; it was rather intended to afford *prompt* relief of

the immediate wants of those upon whom sudden affliction had fallen ; although at the same time, it in no way debarred a continuation of such relief being given should the funds admit thereof." This intention of the founders, although it has not been embodied in a Regulation, has been continued, as a policy, to the present time.

Applicants are desired to fill in a form which can be obtained from the Assistant Secretary of the Royal Society, in which (confidential) information is requested upon the following points :—

1. Name, Age, and Social Condition.
2. Nature of Claims, stating scientific work done by the subject of the proposed grant, or by the member of his family on whose scientific claim he relies, appending a list of his principal contributions to science.
3. The nature of the emergency, and how it has arisen.
4. Whether the applicant is receiving, or has received, during the past six months, pecuniary aid from any other source.
5. Whether the applicant is entitled or able, in the circumstances which have arisen, to look to any other assistance ; and, if so, what is the source and extent of such expected assistance.
6. Particulars of—

Number in family.

How many are self-supporting.

How many are partially dependent.

How many are wholly dependent.

In 1886 Sir William (afterwards Lord) Armstrong gave a sum of £7,800 to the Scientific Relief Fund, on the understanding that the said fund should be used for remission of fees in cases of urgent necessity. By a Resolution of Council passed December 10, 1889, "the question of the remission of fees to Fellows of the Society in impecunious circumstances is reserved for the sole consideration of the resident and Council of the Society, the amount thus from time to time bestowed being communicated to the Scientific Relief Committee."

NATIONAL PHYSICAL LABORATORY.

His Majesty's Government having agreed to ask Parliament for a grant not exceeding £12,000 for the buildings and equipment of a National Physical Laboratory, and for an annual sum of £4,000 for five years certain as a grant in aid of the expenses of conducting the Institution, the appended scheme for the organization and management of the Laboratory has been drawn up by the Royal Society and approved by His Majesty's Government.

SCHEME OF ORGANIZATION.

1. The name of the Institution shall be the National Physical Laboratory. The Kew Observatory shall be incorporated therewith.

2. The ultimate control of the Institution shall be vested in the President and Council of the Royal Society, who in the exercise thereof may from time to time issue such directions as they may think fit to the General Board and Executive Committee hereinafter described. The President of the Royal Society shall be the Chairman of the Governing Body as hereinafter defined. The income and all other property of the Institution shall be vested in the Royal Society for the purposes of the Institution.

3. For the present, and until otherwise ordered by the President and Council of the Royal Society, with the approval of H.M. Treasury, there shall be a Governing Body for the Institution, consisting of a General Board and an Executive Committee, the constitution and duties of which shall be as hereinafter defined. Provided always that the Permanent Secretary of H.M. Board of Trade shall be *ex officio* a member of the Governing Body, and that the choice of members of the Governing Body, or of any Committee thereof, shall not be confined to Fellows of the Royal Society.

4. The General Board shall consist of the President, Treasurer, and Secretaries of the Royal Society, the Vice-Chairman of the Board (appointed as defined below by the President and Council of the Royal Society), the Permanent Secretary of the Board of Trade, and of thirty-six ordinary members.

Twenty-four of the ordinary members shall be appointed by the President and Council of the Royal Society; of the remaining twelve ordinary members, two shall be nominated for appointment by the Council of each of the following Institutions, as being fitted to represent commercial interests in connection with the Laboratory:—

The Institution of Civil Engineers.

The Institution of Mechanical Engineers.

The Institution of Electrical Engineers.

The Iron and Steel Institute.

The Institution of Naval Architects.

The Society of Chemical Industry.

In the selection of ordinary members of the General Board care shall be taken that Scotland and Ireland are represented.

Any person not being already a member of the General Board who shall become a member of the Executive Committee, shall be a member of that Board during his tenure of office on the Executive Committee, but shall be regarded as an additional, and not as an ordinary, member of the Board.

5. The Executive Committee shall consist of the President, Treasurer, and one of the Secretaries of the Royal Society; the Vice-Chairman of the Executive Committee (appointed as defined below); the Permanent Secretary of the Board of Trade; six persons appointed by the President and Council of the Royal Society from among those who are members of the Kew Observatory Committee at the time when the Kew Observatory is incorporated in the National Physical Laboratory (two of these six persons shall retire at the end of every two years, and vacancies occurring amongst them by retirement or otherwise shall not be filled up); and of twelve ordinary members.

The ordinary members shall be nominated by the President and Council of the Royal Society, but one-half shall be chosen from among those members of the General Board who have been nominated as fitted to represent commercial interests on that Board.

Those members of the Executive Committee who are Fellows of the Royal Society, shall be appointed by the President and Council to be the Gassiot Committee of the Royal Society.

6. The Vice-Chairman of the General Board shall be appointed by the President and Council of the Royal Society, and shall also be Vice-Chairman of the Executive Committee. He shall hold office for six years, and shall be eligible for re-appointment, but shall not hold office for more than twelve years.

7. At least one-sixth of the ordinary members of the General Board and of the Executive Committee shall retire annually.

In the case of the General Board, the retiring ordinary members shall be selected by seniority, four being selected from the members nominated by the President and Council of the Royal Society, and two from the members nominated by the Technical Societies named in the scheme.

In the case of the Executive Committee, the retiring ordinary members shall be selected by seniority, one being selected from the members nominated by the President and Council of the Royal Society, and one from the members nominated by the Technical Societies named in the scheme.

No retiring member of the General Board or of the Executive Committee shall be eligible for re-appointment until at least one year has elapsed from the date of his retirement.

The President and Council shall have power to remove from the General Board and from the Executive Committee any member of either whom they may judge to be disqualified.

Vacancies on the General Board or on the Executive Committee due to death, resignation, or removal by the President and Council of the Royal Society, shall be filled by the President and Council of the Royal Society, provided always that—

- (1) Any person so appointed shall, for the purposes of the regulations for retirement from the Board or Committee, be regarded at the time of his appointment as having served for the same period as the member to whose place he succeeds.
- (2) If the vacancy on the General Board be caused by one of the persons nominated as fitted to represent commercial interests, ceasing to be a member of the Board, the President and Council of the Royal Society shall choose his successor from among a list of names recommended by the Councils of the Institutions named in Section 4.
- (3) If a vacancy on the Executive Committee be caused by one of the persons nominated as fitted to represent commercial interests ceasing to be a member of the Committee, his successor shall either be selected from among those members of the General Board who were nominated as fitted to represent commercial interests, or shall be nominated by the President and Council of the Royal Society after consultation with the Councils of the Institutions named in Section 4.

The President and Council of the Royal Society shall determine the order of the seniority of the members of the first General Board and of the first Executive Committee for the purposes of the regulations for retirement.

The Executive Committee.

8. The Executive Committee shall have the immediate management of the National Physical Laboratory; shall appoint and dismiss the officials, except the Director; and shall determine the nature of the work to be undertaken from time to time.

The General Board.

9. A meeting of the General Board shall be held in March, at which the Executive Committee shall present a report on the work and finances of the National Physical Laboratory during the year

ending on the preceding December 31. Copies of this report shall be circulated among the members of the General Board at least one week before the meeting, and after the meeting shall be forwarded to the President and Council of the Royal Society, together with any further report, resolutions, or recommendations which may be added by the General Board.

The Executive Committee shall also lay before the General Board at its meeting in March a statement as to the work which it is proposed to undertake in the Laboratory during the ensuing year. This statement shall be circulated among members of the Board at least a week before the meeting; and the General Board may make such recommendations relative to the statement, or to the future work of the National Physical Laboratory, as they may think fit.

These recommendations shall be laid before the Executive Committee for their consideration.

Sub-Committees.

10. The Executive Committee may from time to time appoint Sub-Committees, of which the members shall not necessarily be members of the Executive Committee or of the General Board, either to superintend or to assist in certain specified investigations, or to superintend some department of the National Physical Laboratory.

The Director.

11. The Director of the National Physical Laboratory shall be appointed by the President and Council of the Royal Society after consultation with the Executive Committee, on such terms as the President and Council may determine, and shall be removable by the President and Council. He shall be responsible to, and shall take instructions from, the Executive Committee, but, subject to such instructions, he shall have the sole direction and control of the officials of the National Physical Laboratory and of the work done within it.

The Executive Committee may delegate its power of appointing and dismissing the officials of the Institution to the Director in such cases as it may think fit.

The Director shall neither be allowed nor be called upon to undertake work not connected with the National Physical Laboratory, except with the consent of the Executive Committee.

Finance.

12. The Royal Society shall open a banking account, to be called "The National Physical Laboratory Account of the Royal Society," into which all sums received by the Executive Committee for the purposes of the Institution shall be paid. The Treasurer of the Royal Society shall also pay into this account all sums received by him for the said purposes, after deducting therefrom such amounts as he shall be directed by the President and Council, with the approval of the Treasury, to retain for the purpose of defraying any expenses which the Royal Society may incur in the exercise of its control of the Institution.

The Executive Committee shall be empowered to draw on this account for the purposes of the Institution by cheques signed by such members of the Executive Committee as may be authorised by the Committee to do so.

Legal Proceedings.

13. Any legal proceedings with regard to the affairs of the Institution, which it may become necessary to institute or defend, shall be instituted or defended by the Solicitors of the Royal Society, in the name and on behalf of the Royal Society upon the instructions of the Executive Committee, but no such proceedings shall be instituted or defended without the order of the President and Council of the Royal Society.

The Kew Observatory Committee of the Royal Society.

"The Kew Observatory Committee of the Royal Society," incorporated under the Companies Act, 1867, shall be wound up; and the property thereof shall be held by the Royal Society for the purposes of the Institution.

GENERAL BOARD OF THE NATIONAL PHYSICAL LABORATORY.

Retires
December

Ex-Officio
Members.

1906 The President of the Royal Society.
The Vice-Chairman of the Board (Lord Rayleigh, F.R.S.).
The Treasurer of the Royal Society.
The Secretaries of the Royal Society.
The Permanent Secretary of the Board of Trade.

Retires
December

1903 Sir A. Noble, F.R.S.
 1903 Dr. R. H. Scott, F.R.S.
 1903 Dr. W. N. Shaw, F.R.S.
 1903 Col. R. E. Crompton, R.E.
 1904 Professor A. Schuster, F.R.S.
 1904 Professor J. A. Ewing, F.R.S.
 1904 Dr. Ludwig Mond, F.R.S.
 1904 Professor G. C. Foster, F.R.S.
 1905 Professor J. J. Thomson, F.R.S.
 1905 Professor J. Joly, F.R.S.
 1905 Sir W. J. L. Wharton, F.R.S.
 1905 Lord Kelvin, F.R.S.
 1906 Dr. T. E. Thorpe, For. Sec. R.S.
 1906 Mr. C. E. Stromeyer
 1906 Prof. W. C. Unwin, F.R.S.
 1906 Professor J. Perry, F.R.S.
 1907 Sir A. W. Rücker, F.R.S.
 1907 Mr. C. V. Boys, F.R.S.
 1907 Mr. J. W. Swan, F.R.S.
 1907 Professor H. L. Callendar, F.R.S.
 1908 Professor W. G. Adams, F.R.S.
 1908 Professor A. Gray, F.R.S.
 1908 Professor W. M. Hicks, F.R.S.
 1908 Capt. H. B. Jackson, R.N., F.R.S.

Nominated by the
President and
Council of the
Royal Society

1903 Sir E. H. Carbutt (Inst. Mechan. Engin.)
 1903 Mr. J. T. Milton (Inst. Naval Archit.)
 1904 Sir W. H. Preece (Inst. Civil Engin.)
 1905 Mr. A. Siemens (Inst. Elec. Engin.)
 1905 Mr. W. F. Reid (Soc. Chem. Industry)
 1906 Sir J. Wolfe-Barry (Inst. Civil Engin.)
 1906 Sir B. Samuelson (Iron and Steel Inst.)
 1907 Dr. F. Elgar (Inst. Naval Archit.)
 1907 Mr. W. H. Maw (Inst. Mechan. Engin.)
 1908 Mr. R. Kaye Gray (Inst. Elec. Engin.)
 1908 Mr. R. Forbes Carpenter (Soc. Chem.
Industry)

Nominated by the
Technical Soci-
eties named in
the Scheme.

(On vacancy.)

EXECUTIVE COMMITTEE OF THE NATIONAL PHYSICAL LABORATORY.

Retires

December

- The President of the Royal Society.
- 1906 The Vice-Chairman of the Committee (Lord Rayleigh, F.R.S.).
The Treasurer of the Royal Society.
A Secretary of the Royal Society (Dr. J. Larmor).
The Permanent Secretary of the Board of Trade.
- 1903 Sir Andrew Noble, F.R.S.
- 1904 Dr. W. N. Shaw, F.R.S.
- 1905 Col. R. E. Crompton, R.E.
- 1906 Dr. T. E. Thorpe, For. Sec. R.S.
- 1907 Sir A. W. Rücker, F.R.S.
- 1908 Professor H. L. Callendar, F.R.S.
-
- 1904 Professor G. C. Foster, F.R.S.
- 1906 Professor J. Perry, F.R.S.
- } Members of the
former Kew Ob-
servatory Com-
mittee.
-
- 1903 Sir Edward Carbutt
- 1904 Sir B. Samuelson, F.R.S.
- 1905 Mr. A. Siemens
- 1906 Sir John Wolfe-Barry, F.R.S.
- 1907 Dr. F. Elgar, F.R.S.
- 1908 Mr. R. F. Carpenter
- } Members of the
General Board
nominated by the
Technical Soci-
eties named in
the Scheme.

Director.

R. T. Glazebrook, D.Sc., F.R.S.

Superintendent of Observatory Department.

C. Chree, Sc.D., F.R.S.

Superintendent of Engineering Department.

T. E. Stanton, D.Sc.

REGULATIONS FOR ADMINISTERING THE GOVERNMENT GRANT FOR SCIENTIFIC INVESTIGATIONS.

I.

1. The Government Grant shall be administered by a General Committee, consisting of the President and Council of the Royal Society for the time being, of the following *ex officio* Members :—

The President of the Royal Society of Edinburgh and one other Representative,

The President of the Royal Irish Academy and one other Representative,

The Presidents of—

The British Association,

The London Mathematical Society,

The Royal Astronomical Society,

The Physical Society,

The Institution of Civil Engineers,

The Institution of Mechanical Engineers,

The Institution of Electrical Engineers,

The Chemical Society,

The Iron and Steel Institute,

The Geological Society,

The Royal Geographical Society,

The Linnean Society,

The Zoological Society,

The Anthropological Institute,

The Royal College of Physicians,

The Royal College of Surgeons,

and of the Members, for the time being, of the several Boards hereinafter spoken of.

2. Seven Boards shall be established, viz. :—

A. For the consideration of Applications relating to Mathematics, Mathematical Physics, Crystallography and Mathematical Astronomy.

B. For the consideration of Applications relating to Experimental Physics, Observational Astronomy, and Meteorology.

C. For the consideration of Applications relating to Chemistry and Metallurgy.

D. For the consideration of Applications relating to Geology, Palæontology, Mineralogy, and Geography.

- E. For the consideration of Applications relating to Botany.
- F. For the consideration of Applications relating to Zoology and Comparative Anatomy.
- G. For the consideration of Applications relating to (Animal) Physiology and Medical Subjects.

3. Each Board shall consist of eight members, to be appointed by the President and Council of the Royal Society, Scotland and Ireland being as far as possible represented on each Board, and each member shall serve for four years, so that two retire annually, and be not eligible for re-appointment on the occasion of their retiring. Should a vacancy occur by reason of death or otherwise, at any intermediate time, the Council shall appoint a person to fill the vacancy, and the person so appointed shall retire at the time the member whose place he fills would have retired had he continued until then to be a member, but if he have not served more than two years shall be eligible for re-appointment.

4. The President and Council of the Royal Society shall appoint a member of each Board to be Chairman of the Board. All communications made to and by the Board shall be made through the Chairman, who shall be held responsible for the management of the business of the Board, and who shall have a second or casting vote. When a Chairman is unable to perform the duties of the Chair, he shall appoint a member of the Board to act as his deputy, and to exercise his powers.

II.

5. In order to meet any extraordinary demands which may be made upon the Grant, a Reserve Fund shall be gradually accumulated, but so that it shall not at any time exceed £2,000.

6. A Grant, the payment of which is intended to be completed within the twelvemonth following upon the meeting of the Committee at which the Grant was made, shall be called an "ordinary" Grant. The Committee shall, however, if they see fit, make Grants for "personal" or other expenditure, each of which may extend over a period not exceeding three years, but in no case shall such a personal Grant exceed £300 per annum. For this purpose the Committee may, in any one year, reserve from the Fund of the year an amount sufficient to cover the payment during the period for which the Grant has been made, the continuance of the payment of the instalments of such Grants to be conditional on the recipients furnishing, as hereinafter provided, evidence satisfactory to the Committee that the object of the Grant is being properly carried out. Such Grants shall be called "extended" Grants.

III.

7. Adequate notice shall be given in the public papers each year that applications for Grants must be sent in to the Royal Society not later than the last day of January, and no applications received after that date shall be considered by the Committee of that year.

8. Each applicant shall be required to furnish information under the following heads:—

- a. The nature of the research in which he desires to engage, and of the scientific results expected to follow therefrom.
- b. The amount asked for.
- c. Whether he has received any previous Grant from any source for the same object, and if so, with what results.
- d. Whether any portion of the Grant is to be devoted to his own personal expenses.
- e. What apparatus, if any, of permanent value he will require; so that any instruments, already at the disposal of the Committee, may be utilised.

9. As soon as possible after February 1st in each year, the Secretaries of the Royal Society shall cause to be drawn up a list of all the applications, arranged, according to the nature of the research in each application, in classes corresponding to the above-mentioned Boards, and shall cause such list to be distributed to all Members of the Committee. This list shall contain a brief statement of the information received under Clause 8.

10. The Secretaries of the Royal Society shall further cause to be sent to the Chairman of each Board a list of the applications belonging to the class corresponding to his Board, together with any other information, letters, documents, &c., which may have been furnished by the several applicants.

11. Each Board, having taken into consideration the applications submitted to it, making such use of correspondence between Members of the Board as may be desirable for the purpose, shall send to the Secretaries of the Royal Society, some day in May to be determined each year by the President and Council of the Royal Society, a written Report, stating, with reference to each such application, whether they recommend the acceptance of it in part or in whole, or the rejection of it; and the Secretaries of the Royal Society shall cause the Reports of the several Boards to be distributed as soon as possible to all Members of the Committee.

12. Should any application appear to the Secretaries of the Royal Society to relate to more than one Board, they shall, with the

approval of the President of the Royal Society, refer the application to the several Boards to which it appears to relate. In such cases the Chairman of one of the Boards concerned shall, on the nomination of the President of the Royal Society, be requested to take charge of the application, to be responsible for its being laid before the Boards concerned, and to present the Report of those Boards on the application at the same time that he presents the usual Report of his own Board.

13. It shall be in the power of any Board to initiate an inquiry and to recommend a Grant for the purpose, and such a recommendation having been reported to the Committee with the other recommendations of the Board, shall take its place among applications recommended to the Committee for acceptance, in spite of application not having been made in the ordinary way.

14. The Committee shall meet on the third Wednesday (or, if that fall in Whitsun Week, the fourth Wednesday) in May, at which meeting the Reports of the Boards shall be read, considered (the Chairman of each Board, or in his place some other Member of it, giving such explanations with regard to the decisions of the Board as may seem desirable), and voted upon. The voting shall be by show of hands, unless any Member demands a ballot, in which case it shall be by ballot.

15. In the case of applications which have been recommended by the appropriate Board, or recommendations initiated by any Board, the voting in Committee shall be by simple majority of those present, except in the case of "extended" Grants coming under Clause 6, which Grants shall require the assent of two-thirds of those present.

16. Applications which have been rejected by the appropriate Board shall not be reconsidered in Committee except with the consent of two-thirds of those present, and any applications so reconsidered shall not be granted by the Committee otherwise than by a majority of two-thirds; likewise a proposal to increase the amount of any Grant made by a Board shall not be considered in Committee except with the consent of two-thirds of those present, and the increase so considered shall not be granted by the Committee otherwise than by a majority of two-thirds.

17. The Committee shall have power to place each year at the disposal of the President and Council of the Royal Society, a sum not exceeding £500 to meet any pressing demands upon the Fund which may be made between the annual meetings of the Committee.

18. The President of the Royal Society shall further have power, in case he is of opinion that there is urgency for an immediate Grant of a sum too large to be provided by the Fund referred to in 17, and necessitating a call upon the Reserve Fund, to summon a Special Meeting of the Committee, who, if they see fit, shall decide on such Grant, provided always that due notice of such meeting, with a statement of the purpose for which it is called, be sent to each Member of Committee fifteen days before the date fixed for the meeting.

IV.

19. All Grants shall be subject to the following conditions, and every applicant shall, on his applying, be duly informed of these conditions:—

- i. That all instruments, specimens, objects, or materials of permanent value, whether purchased or obtained out of, or by means of, the Grant, or supplied from among those at the disposal of the Committee, are to be regarded, unless the Committee decide otherwise, as the property of the Government, and are to be returned by the applicant, for disposal according to the orders of the Committee, at the conclusion of his Research, or at such other time as the Committee may determine.
- ii. That every one receiving a Grant shall furnish to the Committee, on or before the 31st of December following upon the allotment of the Grant, a Report (or, if the object of the Grant be not then attained, an interim Report, to be renewed at the same date in each subsequent year until a final Report can be furnished), containing (a) a brief statement showing the results arrived at, or the stage which the inquiry has reached; (b) a general statement of the expenditure incurred, accompanied, so far as is possible, with vouchers; (c) a list of the instruments, specimens, objects or materials, purchased or obtained out of the Grant, or supplied by the Committee, which are at present in his possession; and (d) references to any Transactions, Journals, or other publications in which results of the Research have been printed.
- iii. That when a Grant is asked for a definite Research, for which an estimate can be obtained, applicants are required, with their applications, to furnish such an estimate.
- iv. That when an application is for a Grant to two or more persons to act as a Committee for the purpose of carrying

out some scientific object, the application shall state which Member of the proposed Committee is willing to act as Secretary, to be responsible for furnishing the Report, for receiving and disbursing the money, and in general for the conduct of the business of the Committee.

- v. That Grants shall lapse at the end of two years from the date of allotment, if application for payment be not made within that time.
- vi. That papers in which results are published which have been obtained through and furnished by the Government Grant, should contain an acknowledgment of that fact.

The Committee shall further have power to attach to any Grant any other conditions which they may think desirable.

20. Every applicant to whom a Grant is made shall, before any of the Grant is paid to him, be required to sign an engagement (which may be incorporated in the receipt for the money) that he is prepared to carry out the general conditions applicable to all Grants, as well as any conditions which may be attached to his particular Grant.

21. Printed copies of the Reports, provided for by Regulation 19, § ii, shall each year, so soon as possible after January 31, be submitted to the several Boards; and it shall be the duty of each Board to examine the Reports relating to Grants recommended by it, and to report to the Committee (or, in case of urgency, to the Council of the Royal Society) any deficiencies therein, or any action relating thereto which the Board thinks desirable.

22. In the case of a Grant recommended by a Board being for the purpose of enabling the applicant to collect by means of the Grant, or part of it, specimens, objects, or materials of permanent value, the Board shall, whenever it is able to do so, add to its recommendation conditions as to the final disposal of such specimens, objects, or materials.

23. When an application is for a Grant to two or more persons to act as a Committee for the purpose of carrying out some scientific object, the application shall state which Member of the proposed Committee is willing to act as Secretary, to be responsible for furnishing the Report, for receiving and disbursing the money, and in general for the conduct of the business of the Committee.

24. The recipient of an "extended" Grant shall make to the Board which recommended the Grant, half-yearly, or, if the Board desire it, oftener, such Reports as the Board may determine concerning the way in which the object of the Grant is being carried out;

and each such recipient shall, on receiving notice that the Grant has been made to him, be informed of his duty to make such Reports, and shall express in writing his willingness to do so. Should any Board be of opinion, after receiving such Reports, that the object of the Grant is not being properly carried out, they shall report the same to the next meeting of the Committee. The Chairman of the Board shall move at the meeting of the Committee that the Grant be discontinued, and if the Committee by a majority approve of the Grant being discontinued, it shall be discontinued.

V.

25. The duties of Clerk to the Committee and other business incidental thereto may be performed by the staff of the Royal Society; and the sum of £200 shall be yearly placed at the disposal of the Council for salaries and incidental purposes.

26. A Schedule shall be kept of all instruments, specimens, &c., of permanent value, in furtherance of Regulation 19, and of Clause c of Regulation 8.

27. A Professional Accountant shall be employed to audit the accounts in chief. A preliminary examination of the detailed accounts and vouchers shall be made by the Clerk to the Committee, who is instructed to submit to the Chairman of the appropriate Boards the cases concerning which he is not satisfied; and the Chairman of a Board shall be requested to examine, if necessary, any such case so submitted to him, and to take such action as may seem to him desirable.

APPENDIX TO THE GOVERNMENT GRANT REGULATIONS.

I.

INSTRUCTIONS FOR THE GOVERNMENT GRANT BOARDS.

(Minutes of Council, March 15, 1894.)

1. Each Chairman has authority to summon his Board, whenever he thinks fit (in addition to any Meeting or Meetings of the Board which may be appointed by the Council), to meet either at the Rooms of the Royal Society, during the hours specified in the Statutes (chap. xiv, § 7), or at such other place as he may deem desirable.

2. The summonses are to be issued by the Clerk at the direction of the Chairman.

3. Any four members of a Board are to be a quorum of that Board ; but the decisions arrived at at a Meeting of a Board at which less than four members are present shall be valid, if subsequently agreed to in writing by not less than five members in all.

4. It is desirable that each year a Meeting of each Board should be held at the Society's Rooms soon after the receipt by the Chairman of the applications, and that another Meeting to come to final decisions on the applications should be held, also at the Society's Rooms, on the day fixed by the Council ; but the Chairman may, if he finds it desirable, change the day of the latter Meeting, and he may even omit the one or the other of these Meetings, should he judge the one or the other to be unnecessary.

5. If the Chairman of a Board, on receiving a list of applications under Regulation 10, shall find that any application on that list is, in his opinion, more appropriate to another Board than his own, or that any application which ought, from its nature, to have been referred to a Board or to Boards besides his own, is referred only to his own Board, or that an application proper to his Board has been referred to another Board, he shall at once report the same to the Secretaries of the Royal Society.

6. The Chairman of a Board may authorise the transfer of any instrument, specimen, &c., obtained by means of a Government Grant, and no longer needed by the person by whom it was obtained or to whom it was assigned, to any other person applying to the Government Grant Committee for the loan of the instrument, specimen, &c., if in his judgment such a transfer is desirable. He shall in each case report his having done so to the Secretaries of the Royal Society.

7. The Chairman of each Board is expected to see that the Annual Reports* furnished by Grantees give an adequate account of the work done and the results attained, and in cases where the Reports are inadequate, to inform the Clerk of the fact in order that he may communicate with such Grantees.

8. The Chairman of a Board is requested to examine, with the assistance if necessary of one or more members of his Board, any case submitted to him by the Clerk to the Committee in pursuance of Regulation 27, and to take such action as may seem to him desirable.

* By "Report" is not meant a complete scientific exposition of the inquiry, but such a statement as will show that the Grantee has expended the money for the purpose mentioned in his Application. and will briefly indicate to what extent he has attained the objects of the inquiry.

II.

INSTRUCTIONS FOR A COMMITTEE APPOINTED FOR THE PURPOSE OF
ADMINISTERING A GRANT UNDER SECTION 23 OF THE GOVERNMENT
GRANT REGULATIONS.

(Minutes of Council, February 22, 1895.)

1. The Secretary of the Committee has authority to call a Meeting of the Committee whenever he thinks desirable, either at the Rooms of the Royal Society, during the hours specified in the Statutes (chap. xiv, § 7), or at such other place as he may deem desirable.

2. The summons for each such Meeting shall be issued by the Clerk, from the Society's Apartments.

3. To constitute a quorum, at any meeting of the Committee, at least one-half of the Members of the Committee, the Secretary being one, must be present.

4. The provisions of Regulation 19 apply in all particulars to a Committee as well as to an individual applicant, and every Committee receiving a Grant is to continue (subject to any decision to the contrary by the Council of the Royal Society, or by the General Committee) until such time as the final Report upon their research has been furnished.

5. When a Committee is re-appointed, with or without change as to the persons composing it, for continuing a research, and receiving a new Grant, it is to be considered a new Committee for all purposes of expenditure and reporting, and is in no way responsible for expenses incurred by its predecessor.

The above instructions are intended only for the cases in which a Committee is especially constituted in order to receive a Grant. Grants may be made to already existing Committees established independently of any application for a Grant. In such cases the above instructions are not intended to apply, and the procedure of meetings, constitution of quorum, &c., of such a Committee must be determined in each case by the Committee itself. In all such latter cases the Chairman or Secretary of the Committee, or some other person, must be authorised by the Committee to be the responsible representative of the Committee in question before the Government Grant Committee, to make application to receive moneys, to furnish reports, &c., &c.

December 1, 1898.

GOVERNMENT GRANT BOARDS, 1903.

BOARD A.

(Mathematics, Mathematical Physics, Crystallography, and
Mathematical Astronomy.)*Chairman*—Major MacMahon.

	Retire March 1st
* <i>Mr. Basset, Prof. H. H. Turner</i>	1903
Prof. Burnside, Prof. Love	1904
Prof. Hill, Major MacMahon	1905
Prof. Bryan, Prof. Lamb	1906
Dr. Glaisher, Mr. L. Fletcher	1907

BOARD B.

(Experimental Physics, Observational Astronomy, and Meteorology.)

Chairman—Prof. Callendar.

<i>Prof. Fleming, Prof. G. Carey Foster</i>	1903
Prof. Callendar, Mr. McClean	1904
Dr. Glazebrook, Prof. J. Joly	1905
Prof. J. J. Thomson, Prof. Gray	1906
Prof. Hicks, Prof. Schuster	1907

BOARD C.

(Chemistry and Metallurgy.)

Chairman—Prof. McLeod.

<i>Prof. Living, Prof. Ramsay</i>	1903
Prof. McLeod, Dr. H. Müller	1904
Prof. Japp, Prof. W. P. Wynne	1905
Prof. Collie, Prof. W. H. Perkin, jun.	1906
Prof. Tilden, Prof. Aug. Dixon	1907

* Members whose names are in italics serve only *until* March 1, 1903. The two members named last on each Board serve only *from* March 1, 1903.

BOARD D.

(Geology, Palæontology, Mineralogy, and Geography.)

Chairman—Mr. Hudleston.

Retire March 1st

<i>Mr. L. Fletcher, Mr. J. E. Marr</i>	1903
Mr. Hudleston, Lieut.-Gen. McMahon	1904
Prof. Seeley, Admiral Sir W. Wharton	1905
Prof. Bonney, Prof. Geikie	1906
Prof. Lapworth, Prof. Miers	1907

BOARD E.

(Botany.)

Chairman—Dr. D. H. Scott.

<i>Sir E. Fry, Mr. G. Murray</i>	1903
Mr. A. C. Seward, Prof. J. W. H. Trail	1904
Mr. H. T. Brown, Dr. D. H. Scott	1905
Mr. J. S. Gamble, Prof. J. R. Green	1906
Prof. Balfour, Sir John Kirk	1907

BOARD F.

(Zoology and Comparative Anatomy.)

Chairman—Dr. Günther.

<i>Mr. Elwes, Prof. Poulton</i>	1903
Prof. A. Newton, Prof. Weldon	1904
Prof. Cunningham, Prof. Howes	1905
Prof. Haddon, Dr. Traquair	1906
Dr. Günther, Prof. Herdman	1907

BOARD G.

(Animal Physiology and Medical Subjects.)

Chairman—Prof. Sidney Martin.

<i>Prof. Ferrier, Prof. Schäfer</i>	1903
Dr. Langley, Prof. Sidney Martin	1904
Sir T. Lauder Brunton, Prof. Gotch	1905
Prof. Halliburton, Prof. J. M. Purser	1906
Dr. L. Hill, Prof. Starling	1907

Account of the Appropriation of the Sum of £4,000 (the Government Grant) annually voted by Parliament for Scientific Investigations.

April 1, 1901, to March 31, 1902.

	£	s.	d.
Thomas Wright, for the Continuation of the Reduction of Tidal Observations by the Methods of Prof. Darwin	25	0	0
Prof. H. H. Turner, for the Measurement and Reduction of 1,180 Plates in Zones + 25° to + 31°, according to the Scheme of the Astrographic Conference of 1887	150	0	0
A. E. Tutton, for an Extension of his Work on "the Connection between the Chemical Composition of Isomorphous Series of Salts and the Physical Properties of their Crystals"	80	0	0
Philip E. Shaw, for Investigations with the Electric Micrometer	25	0	0
Prof. J. C. Beattie (for a Committee), for the Continuation of a Magnetic Survey of South Africa	150	0	0
W. F. Denning, (a) for the Observation of Meteors and Determination of their Radial Points; (b) Search for New Comets (<i>personal</i>)	25	0	0
Lightning Research Committee, for the Purpose of Obtaining Trustworthy Information on Future Disasters from Lightning	20	0	0
G. A. Shakespear, for a Further Investigation into the Elasticity of Rods and Wires of Various Substances, especially when Subjected to very Small Loads.....	20	0	0
E. H. Griffiths, for a Research on the Depression of the Freezing Point due to the Presence of Substances in Solution	40	0	0
J. E. Petavel, for a Research on a Standard of Light	50	0	0
R. L. Wills, for a Research on the Influence of Elements on the Magnetic Properties of Iron, and the Effect of Temperature on the Magnetic Properties of certain Alloys of Iron	30	0	0
Carried forward.....	£615	0	0

Brought forward.....	£615	0	0
Dr. G. Johnstone Stoney, for the Construction of a Model of a Special Siderostat	30	0	0
W. G. Walker, for a Research on the Resistance of Surfaces in Air (Third Series)	25	0	0
Prof. Hele-Shaw and Alfred Hay, for the Further Study of Problems in Magnetic Induction by the Stream Line Method, &c.	75	0	0
Prof. Meldola, for a Research on the Isomerism of certain Aminoamidines	50	0	0
Dr. Oswald Silberrad, (a) to Settle the Constitution of such Substances as the new Formula for Triazoacetic Acid renders Doubtful; (b) for a Research on the Constitution of a a Diglutaric Acid	25	0	0
Prof. W. H. Perkin, junr., for a Further Research on the Constitution of Camphor, Camphoric Acid and Allied Substances	50	0	0
Dr. F. D. Chattaway, for the Continuation of the Study of Chlor and Bromamino Derivatives and their Transformations	30	0	0
Prof. Japp, for the Further Investigation of the Reactions of Ketones, Diketones and Allied Compounds	75	0	0
Dr. W. A. Bone, for the Continuation of a Research on the Direct Union of Carbon and Hydrogen and the Decomposition of Hydrocarbons at High Temperatures, &c.	10	0	0
Prof. Kipping, to Continue the Study of Optically Active and Externally Compensated Compounds	60	0	0
T. S. Patterson, for a Research on the Variation of Rotation of Optically Active Compounds Dissolved in Different Media	7	0	0
Henry Jackson, for a Research on (a) Condensation Products of Dioxycetone; (b) the Constitution of Glycogen	30	0	0
A. Croft Hill, for the Continuation of a Research on Reversed Ferment Action.....	10	0	0
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Carried forward.....	£1,092	0	0

Brought forward.....	£1,092	0	0
J. T. Hewitt, for the Examination of Fluorescent Compounds	40	0	0
Prof. T. H. Easterfield, for a Research on the Chemistry of the Poisonous Plants of New Zealand	50	0	0
Dr. Morris W. Travers, for the Determination of the Expansion, Pressure, and Volume Co-efficients for Hydrogen and Helium down to the Temperature of Liquid Hydrogen	100	0	0
Miss Ethel M. R. Wood, for the Collection of Additional Material for the Monograph of the British Graptolites in Course of Preparation for the Palæontographical Society	50	0	0
Prof. H. A. Miers, for the Continuation of a Research upon the Irregularities of the Angles of Crystals	10	0	0
Henry Woods, for the Continuation of a Monograph on the Cretaceous Lamellibranchs of England	25	0	0
Sir Archibald Geikie, for the Continued Preparation of the International Geological Map of Europe	77	0	0
Prof. Sollas, for Continuation of an Investigation of the Structure of Fossil Remains of Organisms	100	0	0
Robert Kidston, for a Research on Vertical and Horizontal Distribution of British Palæozoic Plants	25	0	0
Dr. F. F. Blackman, for the Construction of Clock-work Apparatus to enable Experiments on the Assimilation in Plants to be Automatically Carried On	25	0	0
W. West, for an Investigation of the Freshwater Algæ of a Large District in the North of Scotland	25	0	0
J. C. Willis, for Assistance in the Prosecution of his Studies of the Podostemaceæ	35	0	0
Prof. F. W. Oliver, for a Research on the Morphology of Fossil Gymnosperm Seeds	20	0	0
Nelson Annandale, to Investigate the Zoology of the Caves of Jalor	100	0	0
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Carried forward.....	£1,774	0	0

Brought forward.....	£1,774	0	0
Prof. G. S. Brady, for a Research on the Physical and Seasonal Distribution of Fishes on the N.E. Coast of England, and on the Fauna of the North Sea in the same Area	20	0	0
Walter E. Collings, to Study the Anatomy of Certain Pulmonate Molluscs	25	0	0
W. H. L. Duckworth and R. A. Worthington, for the Determination of the Length of the Long Bones of the Human Skeleton in the Living Individual with the Aid of the Röntgen Rays.....	60	0	0
W. B. Randles, for a Research on the Anatomy and Histology of the Genus Trochus	25	0	0
Dr. F. W. Gamble (for a Committee), for a Research on Parallel Biological and Physiological Lines into the Origin and Meaning of Colour and Colour-patterns, in Crustacea	25	0	0
R. C. Punnett, for an Investigation of the Nerve Plexus in the Vertebral Column of Elasmobranchs (<i>part personal</i>).....	40	0	0
J. P. Hill, for the Completion of Work on the Development of Marsupials	50	0	0
R. Evans, for the Working out of Material Collected by him in the Skeat Expedition in 1899-1900	50	0	0
Dr. Walter E. Dixon, for a Research on the Effect of Various Conditions and Agents on Leucocytes in the Animal Body.....	15	0	0
J. J. R. Macleod, to Ascertain whether Other Factors Beside Muscular Metabolism Influence the Amount of Creatinine Excreted in the Urine.....	15	0	0
Prof. W. E. F. Thomson, for the Continuation of a Research to Determine the Possibility of Photographing the Movements of the Iris	5	0	0
Dr. N. D. Bardswell, for Experimental Research on the Metabolism of Pulmonary and Other Forms of Tuberculosis	15	0	0
Carried forward.....	£2,119	0	0

Brought forward.....	£2,119	0	0
Dr. Washbourn, for the Continuation of Investigations into the Life History of the <i>Diplococcus Pneumoniæ</i> and the Question of the Formation of Toxins by this Organism	30	0	0
Dr. Leonard Hill, for the Continuation of Researches on (a) The Influence of Increased Atmospheric Pressure on Living Organisms and the Causation of Caisson Disease. (b) The Vaso-Motor Supply of the Brain	30	0	0
Prof. E. H. Starling, for a Research on (a) The Movements and Innervation of the Stomach. (b) The Sphincter Mechanism of the Urinary Bladder. (c) The Passing of Gas Across Animal Membranes.....	50	0	0
J. Herbert Parsons, for (a) Degeneration Experiments. (b) Experiments upon the Nervous Mechanism of the Movements of the Pupil	30	0	0
J. Walker Hall, for an Investigation of the "Purin" Bodies of Foodstuffs in their Relation to the Metabolism of the Human System in Health and in Disease	10	0	0
Dr. R. B. Mahon, for a Research on the Bacteriology of Typhus Fever	10	0	0
Prof. Halliburton, for the Continuation of Work on the Physiological Action of Extracts of Nervous Tissues	40	0	0
Joseph Barcroft, for the Continuation of a Research on the Blood Gases of the Submaxillary	30	0	0
Prof. Sherrington, to Pursue Further the Effects of "Shock" upon the Spinal Cord, and to Trace the Phenomena Accompanying its Subsidence	40	0	0
Dr. T. G. Brodie, for (a) Experiments upon the Isolation of the Mammalian Heart. (b) The Determination of the Velocity of the Blood through the Organs of the Body. (c) The Study of the Contraction of the Mammalian Muscle while within the Body	50	0	0
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Carried forward.....	£2,439	0	0

Brought forward.....	£2,439	0	0
Dr. J. L. Bunch, for Experiments (a) Upon the Metabolic Function of the Kidney. (b) The Effect of Certain Drugs upon the Circulation through the Vessels of the Skin.....	40	0	0
W. Hunter Richards, for a Research on the Causation of Albumenuria and Eclampsia in Pregnancy	20	0	0
Dr. M. S. Pembrey, for (a) Further Experiments on Hibernation. (b) Experiments on Total Metabolism. (c) Further Experiments on Nervous Regulation of Temperature. (d) Continuation of Research on the Effects of Muscular Exercise on Temperature, Respiration and Circulation	30	0	0
Prof. Tunnicliffe, to Determine the Physiological Action of Pyrolidine and its Derivatives	40	0	0
Dr. W. A. Osborne, for a Research on the Changes in the Structure and Metabolism of the Kidney due to Operative Interference with the Renal Vessels	20	0	0
Dr. P. Horton-Smith, for a Research on the Effect of certain Drugs and other Bodies upon the Growth of the Tubercle Bacillus... ..	20	0	0
I. L. Tuckett, for Further Investigation of the Causation of Glycosuria	30	0	0
B. Moore, for an Enquiry into the Osmotic Properties of Colloidal Solutions, and to Study the Application of the Facts Obtained to certain Physiological Problems ...	30	0	0
Dr. Edridge-Green, to Ascertain whether the Visual Purple is Diffused into the Yellow Spot by Light	10	0	0
Dr. Swale Vincent, for a Research on the Chemistry and Physiological Action of Extracts of Different Varieties of Muscle and other Animal Tissue.....	20	0	0
Dr. H. F. Nuttall, to Pursue "Studies in Relation to Malaria".....	30	0	0
Joint Antarctic Committee (2nd Instalment of a Grant of £1,000)	333	6	8

Carried forward.....£3,062 6 8

Brought forward.....£3,062 6 8

Prof. E. Wilson, in aid of Continued Experiments on the Shielding Effects of Induced Currents in Solid Iron Cores 80 0 0

Dr. C. S. Myers, to Conduct Anthropometric Investigations among Native Troops in the Egyptian Army ... 20 0 0

Dr. Henry Woodward, to enable Miss Bate to Explore certain Limestone Caves in Cyprus, &c. 30 0 0

Malaria Committee, in Aid of the Expenses of the Commission 200 0 0

£3,392 6 8

REVENUE ACCOUNT.

1901-1902

GENERAL FUND.

<i>Cr.</i>	£	s.	d.		<i>Dr.</i>	£	s.	d.
To Appropriations as above	3,392	6	8		By Balance, April 1, 1901	57	12	6
„ Salary, Printing, Postage, Advertising, and other Administrative Expenses	200	0	0		„ Parliamentary Grant .	4,000	0	0
„ Transferred to Reserve Fund.....	465	5	10					
	<u>£4,057</u>	<u>12</u>	<u>6</u>			<u>£4,057</u>	<u>12</u>	<u>6</u>

RESERVE FUND.

<i>Cr.</i>	£	s.	d.		<i>Dr.</i>	£	s.	d.
To Balance, Mar. 31, 1902	1,545	12	0		By Balance, April 1, 1901	599	10	9
					„ Transfer from General Fund	465	5	10
					„ Miscellaneous Receipts, including Repayments and Sale of Apparatus	480	15	5
	<u>£1,545</u>	<u>12</u>	<u>0</u>			<u>£1,545</u>	<u>12</u>	<u>0</u>

REGULATIONS GOVERNING THE USE OF THE LIBRARY
OF THE ROYAL SOCIETY.

1.* The Library shall be open to the Fellows every week-day (exclusive of Good Friday and Easter-eve, of Easter week, of a week at Whitsuntide, and of a week at Christmas), from 11 A.M. to 6 P.M., except on Saturdays, when it shall be open from 11 in the morning to 1 in the afternoon; but during the months of August and September, it shall be closed on week-days other than Saturdays at 4 P.M.

2. Any Fellow may have the loan of any of the printed Books of the Society, excepting such as the Council shall order not to be taken out of the Library; but he shall not be allowed to have in his possession more than ten volumes at a time. The loan of Manuscripts is exclusively vested in the President and Council.

3. A List of all Books and Manuscripts borrowed from the Library of the Royal Society, and of the Fellows of the Society to whom they are lent, shall be kept in the Library.

4. All books whatsoever belonging to the Society, shall be returned at a time to be specified by the Council in each year; and the Library shall be closed for one month after such time, or for such shorter periods as the Council may direct.

5. The value of such Books in the possession of any Fellow as are not returned to the Library, pursuant to the preceding Statute, shall be required to be paid by the person who has so detained them.

6. No persons other than Fellows have the privilege of using the Library, except upon a written introduction from a Fellow, with whom rests the responsibility for all books entrusted to the person introduced. Every such introduction shall be valid only until the 1st August next ensuing.

7. Dictionaries, Cyclopædias, and works of general reference do not circulate.

8. Books of exceptional rarity, size, or value, are only allowed to circulate by special permission of the Council.

9. All books are borrowed subject to recall after one month's interval.

10. All books are returnable to the Library *on the 1st August in each year*, and no books can be borrowed during the month of August.

11. All applications for the use of the Library are to be addressed to the *Assistant Secretary and Librarian*, who is charged with the carrying out of these regulations.

Ordered by the Library Committee at their
meeting on the 16th December, 1898.

* Regulations 1—5 are from the Statutes, ch. xiv.

ADDITIONS TO LIBRARY, 1901-1902.

-
- Bergholz (Paul). The Hurricanes of the Far East. English Translation revised by Dr. Robert H. Scott, F.R.S. 8vo. *Bremen and Shanghai*. From the Author.
- Berthelot (M.), For. Mem. R.S. Les Carbures d'Hydrogène. 1851-1901. 3 vols. 8vo. *Paris* 1901. From the Author.
- Berthelot (M.) Cinquantenaire Scientifique de, 24 Novembre, 1901. 1851-1901. 4to. *Paris* 1902.
From Comité du Cinquantenaire Scientifique de M. Berthelot.
- Bickerton (A. W.) The Romance of the Heavens. 8vo. *London* 1901. From the Author.
- Bordage (Edmond) Sur la Possibilité d'Édifier la Géométrie Euclidienne sans le Postulatum des Parallèles. 8vo. *Saint-Denis (Réunion)* 1902. From the Author.
- Brahe (T.) Tychoonis Brahe Dani die xxiv. Octobris A.D. MDCI. defuncti operum primitias De Nova Stella denuo edidit Regia Societas Scientiarum Danica. 8vo. *Havnie* 1901.
From the K.D. Videnskab. Selskab, Copenhagen.
- British Offices Life Tables. 1893. Tables of Assurances on Male Lives. 8vo. *London* 1902.
From the Joint Mortality Committee, Inst. of Acts. and Fac. of Acts. in Scotland.
- Brooks (H. Jamyn) The Elements of Mind: being an examination into the nature of the First Division of the Elementary Substances of Life. 1 vol. 8vo. *London* 1902. From the Author.
- Burbury (S. H.), F.R.S. A Treatise on the Kinetic Theory of Gases. 8vo. *Cambridge* 1899. From the Author.
- Carte Géologique Internationale de l'Europe. Livraison IV. [7 sheets.] *Berlin* 1902.
From the International Commission for the Map.
- Cauchy (A.) Œuvres Complètes. 1re Série. Tome XII. 4to. *Paris* 1900. From the Académie des Sciences, Paris.
- Cole (G. W.) Bermuda and the "Challenger" Expedition: a Bibliography giving a Summary of the Scientific Results obtained by that Expedition at and near Bermuda in 1873. 8vo. *Boston* 1901. From the Author.
- Cooke (T.) The Flora of the Presidency of Bombay. Part I. 8vo. *London* 1901. From the Secretary of State for India.
- Daffner (F.) Wachstum des Menschen. 2e Auflage. 8vo. *Leipzig* 1902. From the Author.

Davey (Fred. Hamilton) A Tentative List of the Flowering Plants, Ferns, etc., known to occur in the County of Cornwall, including the Scilly Isles. 8vo. *Penryn* 1902. From the Author.

Debus (H. S.), F.R.S. Erinnerungen an Robert Wilhelm Bunsen und seine wissenschaftlichen Leistungen. 8vo. *Cassel* 1901. From the Author.

Dutch Eclipse Expedition. Preliminary Report. Observations at Karang Sago (Sumatra) in May, 1901, and Magnetic Observations. 2 Pamphlets. 8vo. *Amsterdam* 1902.

From the Dutch Eclipse Committee.

Eliot (J.), F.R.S. Hand-book of Cyclonic Storms in the Bay of Bengal, for the use of Sailors. 2 vols. 8vo. *Calcutta* 1900.

From the Meteorological Department, Government of India.

Encyclopædia Britannica. Supplement to the Ninth Edition. 4to. *London* 1902.

Purchased.

Fauna (The) and Geography of the Maldivé and Laccadive Archipelagoes: being the Account of the Work carried on and of the Collections made by an Expedition during the years 1899 and 1900. Edited by J. Stanley Gardiner. Vol. I. Parts 1-3. 4to. *Cambridge* 1902.

From the Syndics of the Cambridge University Press.

FitzGerald (George Francis) The Scientific Writings of. Collected and Edited, with a Historical Introduction, by Joseph Larmor, Sec. R.S. 8vo. *Dublin* 1902. From the University Press, Dublin.

Foote (R. Bruce) The Geology of Baroda State. 8vo. *Madras* 1898. From the Author.

Forsyth (A. R.), F.R.S. Theory of Differential Equations. Part 3. Ordinary Linear Equations. Vol. IV. 8vo. *Cambridge* 1902.

From the Author.

Gallardo (A.) Interpretación Dinámica de la División Celular. 8vo. *Buenos Aires* 1902.

From the Author.

Geological Survey of the South African Republic. Annual Report for the year 1898, by Dr. G. A. F. Molengraaff, State Geologist. Folio. *Pretoria* 1902.

From the Geological Survey of the Transvaal.

Gibbs (J. Willard), For. Mem. R.S. Elementary Principles in Statistical Mechanics. 8vo. *New York* 1902. From the Author.

Goppelsroeder (F.) Capillaranalyse beruhend auf Capillaritäts- und Adsorptionserscheinungen. 8vo. *Basel* 1901. From the Author.

Göttingen:—Königliche Gesellschaft der Wissenschaften. Berichte über luftelectrische Arbeiten, im Jahre 1901-1902. 8vo. *Göttingen* 1902. From the Society.

- Gramme (Zénobe) *Les Hypothèses Scientifiques émises par, en 1900.* 8vo. *Paris* 1902. From Mons. A. Gramme.
- Halliburton (W. D.), F.R.S. *The Croonian Lectures on the Chemical Side of Nervous Activity. Delivered before the Royal College of Physicians of London in June, 1901.* 8vo. *London* 1901. From the Author.
- Hutton (Frederick W.) *The Lesson of Evolution.* 1 vol. 8vo. *London* 1902. From the Author.
- Huxley (T. H.), F.R.S. *Scientific Memoirs. Vol. IV.* La. 8vo. *London* 1902. From Messrs. Macmillan & Co.
- Index Kewensis. *Supplementum Primum. Confecerunt Th. Durand et B. D. Jackson. Fasc. I-II.* 4to. *Bruzellis* [1902]. Purchased.
- International Engineering Congress, Glasgow, 1901. *Proceedings of Sections 1 and 2.* 8vo. *London* 1902. From the Executive Committee.
- King (Sir G.), F.R.S. *Materials for a Flora of the Malayan Peninsula.* 3 vols. 8vo. *Calcutta* 1893-1902. From the Author.
- Maunder (E. Walter) *Astronomy without a Telescope. A Guide to the Constellations, and Introduction to the Study of the Heavens with the Unassisted Sight.* 8vo. *London* 1902. From the Publishers.
- Mélard (A.) *Insufficiency of the World's Timber Supply. Translated by F. Gleadow.* 8vo. *Allahabad* 1901. From the Translator.
- Monardes (N.) *The Dialogue of Yron, which treateth of the Greatnesse thereof, &c.* Sm. 4to. [*London* 1580]. From the Royal Meteorological Society.
- Netzhammer (R.) *Theophrastus Paracelsus.* 8vo. *Einsiedeln* 1901. Purchased.
- Passalsky (P.) *Anomalies Magnétiques dans la Région des Mines de Krivoi-Rog.* 4to. *Odessa* 1901. From B. Weinberg.
- Penrose (F. C.), F.R.S. *On a Method of Predicting by Graphical Construction Occultations of Stars by the Moon and Solar Eclipses for any given Place. Second Edition.* Folio. *London* 1902. From the Author.
- Pingré (A. G.) *Annales Célestes du Dix-Septième Siècle : Ouvrage publié sous les auspices de l'Académie des Sciences, par G. Bigourdan.* 4to. *Paris* 1901. From the Académie des Sciences, Paris.
- Rabot (C.) *Les Variations de Longueur des Glaciers dans les Régions Arctiques et Boréales.* 8vo. *Genève* 1900. From the Author.
- Rayleigh (Lord) *Scientific Papers. Vol. III.* La. 8vo. *Cambridge* 1902. From the Syndics of the Camb. University Press.

- Ronna (A.) Rothamsted: , Un Demi-Siècle d'Expériences Agonomiques de MM. Lawes et Gilbert 8vo. *Paris* 1900.
From the Lawes Agricultural Trust.
- Schück (A.) Magnetische Beobachtungen an der Deutschen Ostseeküste, IIa. 4to. *Hamburg* 1902. From the Author.
- Senier (A.) Bonn on the Rhine: Pages from its History and Stray Thoughts on Education. 8vo. *Dublin* 1901. From the Author.
- Stirling (William) Some Apostles of Physiology: being an Account of their Lives and Labours—Labours that have contributed to the Advancement of the Healing Art as well as to the Prevention of Disease. Folio. *London* 1902.
From Walter Whitehead and William Stirling.
- Theobald (F. V.) A Monograph of the Culicidæ, or Mosquitoes. Mainly compiled from the Collections received at the British Museum from various parts of the World in connection with the Investigation into the Cause of Malaria conducted by the Colonial Office and the Royal Society. 2 vols. and 1 vol. of plates. 8vo. *London* 1901. From the Trustees of the British Museum.
- Thompson (S. P.), F.R.S. Notes on the "De Magnete" of Dr. William Gilbert. Privately printed. Folio. *London* 1901.
From Prof. S. P. Thompson.
- Umon (N.) Ein Versuch die magnetischen Typen des Erdmagnetismus zu ermitteln. 8vo. *Moscow* 1901. From the Author.
- Vernon-Harcourt (L. F.) Civil Engineering as applied in Construction. 8vo. *London* 1902. From the Author.
- Virchow (R.), For. Mem. R.S. Virchow-Bibliographie, 1843-1901. Herausgegeben von J. Schwalbe. 8vo. *Berlin* 1901.
From Prof. Virchow.
- Water Divining. Reprinted from "Water." 8vo. *London*.
From the Proprietors of "Water."
- West (W.) and (G. S.) The Alga-Flora of Yorkshire. 8vo. *Leeds* 1901. From Mr. W. West.
- West Indies:—Imperial Department of Agriculture: Sugar Cane Experiments in the Leeward Islands. Report on Experiments conducted at Antigua and St. Kitts in the season 1900-1901. Parts 1 and 2. Folio. *Barbadoes* 1901. Report on Certain Economic Experiments conducted in connection with the Botanic Station, Antigua, 1900-1901. Folio. *Barbadoes* 1901.

ACCESSIONS TO SERIALS.

-
- Allegheny:—Allegheny Observatory. Miscellaneous Scientific Papers.
New Series. Nos. 1 and 3. 8vo. *Pittsburgh* [1901].
From the Observatory.
- Edinburgh:—Royal Observatory. Annals. Vol. I. Edited by Ralph
Copeland. 4to. *Glasgow* 1902. From the Observatory.
- Journal of Pathology and Bacteriology. 8vo. *Edinburgh and London*.
Purchased.
- London:—African Society. Journal. No. 1, &c. 8vo. *London*
1901-2. From the Society.
- Heidelberg:—Grossherzogliche Sternwarte. Mittheilungen. I. 1901.
8vo. From the Observatory.
- London:—Childhood Society. Transactions. Vol. I. 1901. 8vo.
London 1902. From the Council of the Society.
- Records of the Egyptian Government School of Medicine. La. 4to.
Cairo 1902. From the School.
- Studies from Institute for Medical Research, Federated Malay States.
8vo. *Singapore* 1901. From the Institute.
- Vienna:—Ornithologische Section der K.K. zoologisch-botanischen
Gesellschaft. Die Schwalbe. Neue Folge II, 1900-1901. 4to.
Wien. From the Society.
-

PRESENTATION TO THE SOCIETY, 1902.

-
- Portrait of Mr. Thomas Graham, F.R.S., by G. F. Watts, R.A.
From Mrs. J. C. Inglis.

INSTITUTIONS ON WHICH THE ROYAL SOCIETY IS REPRESENTED.

UNIVERSITIES.

Oxford University—	Representative.	Appointed.
Savilian Professorship of Geometry	The President. (Elector).	<i>Ex officio.</i>
Savilian Professorship of Astronomy.	"	"
Sedleian Professorship of Natural Philosophy.	"	"
Professorship of Experimental Philosophy.	"	"
Wykeham Professorship of Physics.	"	"
Waynflete Professorship of Chemistry.	"	"
Waynflete Professorship of Mineralogy.	"	"
Professorship of Geology.	"	"
Cambridge University—		
Lowndean Professorship of Astronomy and Geometry.	"	"

PUBLIC SCHOOLS.

Governing bodies of:—

Charterhouse.	Professor Sherrington.	Nov. 27, 1902.
Christ's Hospital.	Professor Armstrong.	Jan. 16, 1896.
Dulwich College.	Professor G. C. Foster.	Jan. 19, 1893.
Eton College.	Sir H. E. Roscoe.	Dec. 20, 1888.
Harrow School.	Sir A. Geikie.	June 16, 1892.
Rugby School.	Sir Arthur Rücker.	Mar. 10, 1892.
Shrewsbury School.	Dr. Pye-Smith.	July 7, 1887.
Westminster School.	Professor Bonney.	Oct. 27, 1881.
Winchester College.	Major P. A. MacMahon.	Feb. 16, 1899.

OTHER INSTITUTIONS.

Athenæum Club (Committee).	The President.	<i>Ex officio.</i>
Jenner Institute of Preventive Medicine.	Lord Lister.	May 18, 1893.
British Museum (Trustee).	The President.	<i>Ex officio.</i>
City and Guilds of London Institute (Governor).	"	"
Hunterian Museum (Trustee).	"	"
Imperial Institute.	Sir J. Evans, K.C.B.	Nov. 30, 1893.
Sir John Soane's Museum.	Professor Church.	Jan. 28, 1897.
Joint Scholarships' Board.	Professor Perry.	Nov. 27, 1902.

The President of the Royal Society is also *ex officio* an honorary Member of the Royal Irish Academy.

OTHER PUBLIC FUNCTIONS PERFORMED BY THE ROYAL SOCIETY.

1. Government Grant for Scientific Investigations.—Administrators.
For the Regulations see page 99, *supra*. For the History of this Grant see "Record," p. 156.
2. National Physical Laboratory.—Lessees under the Crown, and Trustees of an endowment by the late J. P. Gassiot for the purposes of Kew Observatory. (For scheme of organisation see p. 91.)
3. Lawes Agricultural Trust.—Electors of four members of the Managing Committee.
4. Meteorological Council.—Nominators.

The Council is the official descendant of the Meteorological Department of the Board of Trade, the history of which is given in the Report by the Committee of Inquiry nominated by the Royal Society, the Board of Trade, and the Admiralty respectively, which was printed and presented to Parliament in 1866. This Department was superseded in 1867 by the Meteorological Committee of the Royal Society. In 1877 the Committee transferred their charge to the Meteorological Council, a paid body, consisting of a chairman and four members, nominated by the President and Council of the Royal Society, and approved by the Lords Commissioners of the Treasury, with the Hydrographer of the Admiralty as an official member. The Council is incorporated under the Companies' Acts. In 1900 the Articles of Association were altered.

5. Physick Garden of Chelsea.

The history of the early connection of the Physick Garden with the Royal Society will be found in the "Record," p. 147. At present the Society has only a representation upon the Committee of Management of the Garden.

6. Royal Observatory, Greenwich.—Visitors.

The Royal Society were appointed Visitors and Directors in 1710, a function which they continued to perform until the accession of King William IV, when, by the new warrant then issued, the President and six of the Fellows of the Royal Astronomical Society were added to the list of Visitors. A new warrant was granted by His Majesty King Edward VII in 1901.

7. Standard Weights and Measures.—Custodians.

The Imperial Standard Yard and Pound in actual use for all important comparisons are at the Standards Office. Four copies of each of them are deposited in other places in case of injury or loss of the standards. One of each of these copies is in the custody of the Royal Society.

INSTITUTIONS

ENTITLED

TO RECEIVE THE PHILOSOPHICAL TRANSACTIONS OR
PROCEEDINGS OF THE ROYAL SOCIETY.

Institutions marked **A** are entitled to receive Philosophical Transactions, Series A, and Proceedings.

Institutions marked **B** are entitled to receive Philosophical Transactions, Series B, and Proceedings.

Institutions marked **AB** are entitled to receive Philosophical Transactions, Series A and B, and Proceedings.

Institutions marked **p** are entitled to receive Proceedings only.

America (Central).

Mexico.

p. Sociedad Científica "Antonio Alzate."

America (North). (See UNITED STATES and CANADA.)

America (South).

Buenos Ayres.

AB. Museo Nacional.

Caracas.

B. University Library.

Cordova.

AB. Academia Nacional de Ciencias.

Demerara.

p. Royal Agricultural and Commercial Society, British Guiana.

La Plata.

B. Museo de la Plata.

Rio de Janeiro.

p. Observatorio.

Australia.

Adelaide.

p. Royal Society of South Australia.

Brisbane.

p. Royal Society of Queensland.

Melbourne.

p. Observatory.

Australia—*continued.*

p. Royal Society of Victoria.

AB. University Library.

Sydney.

p. Australian Museum.

p. Geological Survey.

p. Linnean Society of New South Wales.

AB. Royal Society of New South Wales.

AB. University Library.

Austria.**Agram.**

p. Jugoslavenska Akademija Znanosti i Umjetnosti.

p. Societas Historico-Naturalis Croatica.

Brünn.

AB. Naturforschender Verein.

Cracow.

AB. Kaiserliche Akademie der Wissenschaften.

Gratz.

AB. Naturwissenschaftlicher Verein für Steiermark.

Innsbruck.

AB. Das Ferdinandeum.

p. Naturwissenschaftlich-Medicinischer Verein.

Prague.

AB. Königliche Böhmisches Gesellschaft der Wissenschaften.

Trieste.

B. Museo di Storia Naturale.

p. Società Adriatica di Scienze Naturali.

Vienna.

AB. Kaiserliche Akademie der Wissenschaften.

p. K.K. Geographische Gesellschaft.

AB. K.K. Geologische Reichsanstalt.

B. K.K. Naturhistorisches Hof-Museum.

B. K.K. Zoologisch-Botanische Gesellschaft.

p. Oesterreichische Gesellschaft für Meteorologie.

A. Von Kuffner'sche Sternwarte.

Belgium.**Brussels.**

B. Académie Royale de Médecine.

AB. Académie Royale des Sciences.

B. Musée du Congo.

B. Musée Royal d'Histoire Naturelle de Belgique.

p. Observatoire Royal.

p. Société Belge de Géologie, de Paléontologie, et d'Hydrologie.

p. Société Malacologique de Belgique.

Belgium—continued.

Ghent.

AB. Université.

Liège.

AB. Société des Sciences.

p. Société Géologique de Belgique.

Louvain.

B. Laboratoire de Microscopie et de Biologie Cellulaire.

AB. Université.

Canada.

Fredericton, N.B.

p. University of New Brunswick.

Halifax, N.S.

p. Nova Scotian Institute of Science.

Hamilton.

p. Hamilton Association.

Kingston, Ontario.

AB. Queen's University.

Montreal.

AB. McGill University.

p. Natural History Society.

Ottawa.

AB. Geological Survey of Canada.

AB. Royal Society of Canada.

St. John, N.B.

p. Natural History Society.

Toronto.

p. Toronto Astronomical Society.

p. Canadian Institute.

AB. University.

Windsor, N.S.

p. King's College Library.

Cape Colony.

Cape Town.

A. Observatory.

AB. South African Library.

Grahamstown.

p. Public Library.

Ceylon.

Colombo.

B. Museum.

Denmark.

Copenhagen.

AB. Kongelige Danske Videnskabernes Selskab.

Egypt.

Alexandria.

AB. Bibliothèque Municipale.

England and Wales.

Aberystwith.

AB. University College.

Bangor.

AB. University College of North Wales.

Birmingham.

AB. Central Free Library.

AB. University.

p. Philosophical Society.

Bolton.

p. Public Library.

Bristol.

p. Merchant Venturers' School.

AB. University College.

Cambridge.

AB. Philosophical Society.

p. Union Society.

AB. University Library.

Cardiff.

AB. Free Library.

AB. University College.

Chatham.

AB. Royal Engineers' Head Quarters.

Cooper's Hill.

AB. Royal Indian Engineering College.

Dudley

p. Dudley and Midland Geological and Scientific Society.

Essex.

p. Essex Field Club.

Falmouth.

p. Royal Cornwall Polytechnic Society.

Greenwich.

A. Royal Observatory.

Harpenden.

AB. Lawes Agricultural Trust.

Kew.

B. Royal Gardens.

England and Wales—continued.

Leeds.

- p.* Philosophical Society.
- AB.* Yorkshire College.

Liverpool.

- AB.* Free Public Library.
- p.* Literary and Philosophical Society.
- A.* Observatory.
- AB.* University College.

London.

- AB.* Admiralty.
- p.* Anthropological Institute.
- AB.* Board of Trade: Electrical Standards Laboratory.
- p.* British Astronomical Association.
- AB.* British Museum.
- AB.* British Museum (Nat. Hist.).
- AB.* Chemical Society.
- A.* City and Guilds of London Institute.
- p.* "Electrician," Editor of the.
- B.* Entomological Society.
- AB.* Geological Society.
- AB.* Geological Survey of Great Britain.
- p.* Geologists' Association.
- AB.* Guildhall Library.
- A.* Institution of Civil Engineers.
- p.* Institution of Electrical Engineers.
- A.* Institution of Mechanical Engineers.
- A.* Institution of Naval Architects.
- p.* Iron and Steel Institute.
- AB.* King's College.
- AB.* King's Library.
- B.* Linnean Society.
- AB.* London Institution.
- p.* London Library.
- A.* Mathematical Society.
- p.* Meteorological Office.
- p.* Odontological Society.
- p.* Pharmaceutical Society.
- p.* Physical Society.
- p.* Quekett Microscopical Club.
- p.* Royal Agricultural Society.
- A.* Royal Astronomical Society.
- B.* Royal College of Physicians.
- B.* Royal College of Surgeons.

England and Wales—*continued.*

- p.* Royal Engineers (for Libraries abroad, six copies) .
- AB. Royal Engineers. Head Quarters Library.
- p.* Royal Geographical Society.
- p.* Royal Horticultural Society.
- p.* Royal Institute of British Architects.
- AB. Royal Institution of Great Britain.
- B. Royal Medical and Chirurgical Society.
- p.* Royal Meteorological Society.
- p.* Royal Microscopical Society.
- p.* Royal Statistical Society.
- AB. Royal United Service Institution.
- AB. Society of Arts.
- p.* Society of Biblical Archæology.
- p.* Society of Chemical Industry (London Section).
- p.* Standard Weights and Measures Department.
- AB. University College.
- p.* Victoria Institute.
- AB. War Office.
- B. Zoological Society.

Manchester.

- AB. Free Library.
- AB. Literary and Philosophical Society.
- p.* Geological Society.
- AB. Owens College.

Netley.

- p.* Royal Victoria Hospital.

Newcastle.

- AB. Free Library.
- p.* North of England Institute of Mining and Mechanical Engineers.
- p.* Society of Chemical Industry (Newcastle Section).

Norwich.

- p.* Norfolk and Norwich Literary Institution.

Nottingham.

- AB. Free Public Library.

Oxford.

- p.* Ashmolean Society.
- AB. Bodleian Library.
- AB. Radcliffe Library.
- A. Radcliffe Observatory.

Penzance.

- p.* Geological Society of Cornwall.

England and Wales—continued.

Plymouth.

B. Marine Biological Association.

p. Plymouth Institution.

Richmond.

A. National Physical Laboratory, Observatory Department.

Salford.

p. Royal Museum and Library.

Stonyhurst.

p. The College.

Swansea.

AB. Royal Institution.

Teddington.

A. National Physical Laboratory.

Woolwich.

AB. Royal Artillery Library.

Finland.

Helsingfors.

p. Societas pro Fauna et Flora Fennica.

AB. Société des Sciences.

France.

Bordeaux.

p. Académie des Sciences.

p. Faculté des Sciences.

p. Société de Médecine et de Chirurgie.

p. Société des Sciences Physiques et Naturelles.

Caen.

p. Société Linnéenne de Normandie.

Cherbourg.

p. Société des Sciences Naturelles.

Dijon.

p. Académie des Sciences.

Lille.

p. Faculté des Sciences.

Lyons.

AB. Académie des Sciences, Belles-Lettres et Arts.

AB. Université.

Marseilles.

AB. Faculté des Sciences.

Montpellier.

AB. Académie des Sciences et Lettres.

B. Faculté de Médecine.

Nantes.

p. Société des Sciences Naturelles de l'Ouest de la France.

France—continued.**Paris.**

- AB. Académie des Sciences de l'Institut.
- p. Association Française pour l'Avancement des Sciences.
- p. Bureau des Longitudes.
- A. Bureau International des Poids et Mesures.
- p. Commission des Annales des Ponts et Chaussées.
- p. Conservatoire des Arts et Métiers.
- p. Cosmos (M. L'ABBÉ VALETTE).
- AB. École des Mines.
- AB. École Normale Supérieure.
- AB. École Polytechnique.
- AB. Faculté des Sciences de la Sorbonne.
- B. Institut Pasteur.
- AB. Jardin des Plantes.
- p. L'Électricien.
- A. L'Observatoire.
- p. Revue Scientifique (Mons. H. DE VARIGNY).
- AB. Service Hydrographique de la Marine.
- p. Société de Biologie.
- AB. Société d'Encouragement pour l'Industrie Nationale.
- AB. Société de Géographie.
- p. Société de Physique.
- B. Société Entomologique.
- AB. Société Géologique.
- p. Société Mathématique.
- p. Société Météorologique de France.

Rennes.

- p. Université.

Toulouse.

- AB. Académie des Sciences.
- A. Faculté des Sciences.

Germany.**Berlin.**

- A. Deutsche Chemische Gesellschaft.
- A. Die Sternwarte.
- p. Gesellschaft für Erdkunde.
- AB. Königliche Preussische Akademie der Wissenschaften.
- A. Physikalische Gesellschaft.

Bonn.

- AB. Universität.

Bremen.

- p. Naturwissenschaftlicher Verein.

Germany—*continued.*

Breslau.

p. Schlesische Gesellschaft für Vaterländische Kultur.

Brunswick.

p. Verein für Naturwissenschaft.

Carlsruhe. See Karlsruhe.

Charlottenburg.

A. Physikalisch-Technische Reichsanstalt.

Danzig.

AB. Naturforschende Gesellschaft.

Dresden.

p. Verein für Erdkunde.

Emden.

p. Naturforschende Gesellschaft.

Erlangen.

AB. Physikalisch-Medicinische Societät.

Frankfurt-am-Main.

AB. Senckenbergische Naturforschende Gesellschaft.

p. Zoologische Gesellschaft.

Frankfurt-am-Oder.

p. Naturwissenschaftlicher Verein.

Freiburg-im-Breisgau.

AB. Universität.

Giessen.

AB. Grossherzogliche Universität.

Görlitz.

p. Naturforschende Gesellschaft.

Göttingen.

AB. Königliche Gesellschaft der Wissenschaften.

Halle.

AB. Kaiserliche Leopoldino-Carolinische Deutsche Akademie der Naturforscher.

p. Naturwissenschaftlicher Verein für Sachsen und Thüringen.

Hamburg.

p. Naturhistorisches Museum.

AB. Naturwissenschaftlicher Verein.

Heidelberg.

A. Grossherzogliche Sternwarte.

p. Naturhistorisch-Medicinischer Verein.

AB. Universität.

Jena.

AB. Medicinisch-Naturwissenschaftliche Gesellschaft.

Germany—continued.**Karlsruhe.**

p. Technische Hochschule.

Kiel.

A. Astronomische Nachrichten.

p. Naturwissenschaftlicher Verein für Schleswig-Holstein.

AB. Universität.

Königsberg.

AB. Königliche Physikalisch-Ökonomische Gesellschaft.

Leipsic.

p. Annalen der Physik und Chemie.

AB. Königliche Sächsische Gesellschaft der Wissenschaften.

Magdeburg.

p. Naturwissenschaftlicher Verein.

Marburg.

AB. Universität.

Munich.

AB. Königliche Bayerische Akademie der Wissenschaften.

p. Zeitschrift für Biologie.

Münster.

AB. Königliche Theologische und Philosophische Akademie.

Potsdam.

A. Astrophysikalisches Observatorium.

Rostock.

AB. Universität.

Strasburg.

AB. Universität.

Tübingen.

AB. Universität.

Würzburg.

AB. Physikalisch-Medicinische Gesellschaft.

Greece.**Athens.**

A. National Observatory.

Holland. (See NETHERLANDS.)**Hungary.****Buda-pest.**

AB. Á Magyar Tudós Társaság. Die Ungarische Akademie der Wissenschaften.

p. Königl. Ungarische Geologische Anstalt.

Hungary—continued.

Hermannstadt.

- p.* Siebenbürgischer Verein für die Naturwissenschaften.

Klausenburg.

- AB.* Az Erdélyi Muzeum. Das Siebenbürgische Museum.

Schemnitz.

- p.* K. Ungarische Berg- und Forst-Akademie.

India.

Bombay.

- AB.* Elphinstone College.

- p.* Royal Asiatic Society (Bombay Branch).

Calcutta.

- AB.* Asiatic Society of Bengal.

- AB.* Geological Museum.

- p.* Great Trigonometrical Survey of India.

- AB.* Indian Museum.

- p.* The Meteorological Reporter to the Government of India.

Madras.

- B.* Central Museum.

- A.* Observatory.

Roorkee.

- p.* Roorkee College.

Ireland.

Armagh.

- A.* Observatory.

Belfast.

- AB.* Queen's College.

Cork.

- p.* Philosophical Society.

- AB.* Queen's College.

Dublin.

- A.* Observatory.

- AB.* National Library of Ireland.

- B.* Royal College of Surgeons in Ireland

- AB.* Royal Dublin Society.

- AB.* Royal Irish Academy.

- AB.* Trinity College.

Galway.

- AB.* Queen's College.

Italy.**Acireale.**

p. Accademia di Scienze, Lettere ed Arti.

Bologna.

AB. Accademia delle Scienze dell' Istituto.

Catania.

AB. Accademia Gioenia di Scienze Naturali.

Florence.

p. Biblioteca Nazionale Centrale.

AB. Museo Botanico.

p. Reale Istituto di Studi Superiori.

Genoa.

p. Società Ligustica di Scienze Naturali e Geografiche.

Milan.

AB. Reale Istituto Lombardo di Scienze, Lettere ed Arti.

AB. Società Italiana di Scienze Naturali.

Modena.

p. Le Stazioni Sperimentali Agrarie Italiane.

Naples.

p. Società di Naturalisti.

AB. Società Reale, Accademia delle Scienze.

B. Stazione Zoologica (Dr. DOHRN).

Padua.

p. University.

Palermo.

A. Circolo Matematico.

AB. Consiglio di Perfezionamento (Società di Scienze Naturali ed Economiche).

A. Reale Osservatorio.

Pisa.

p. Il Nuovo Cimento.

p. Società Toscana di Scienze Naturali.

Rome.

p. Accademia Pontificia de' Nuovi Lincei.

p. Rassegna delle Scienze Geologiche in Italia.

AB. Reale Accademia dei Lincei.

A. Reale Ufficio Centrale di Meteorologia e di Geodinamica, Collegio Romano.

p. R. Comitato Geologico d' Italia.

A. Specola Vaticana.

AB. Società Italiana delle Scienze.

Sassari.

p. Università. Istituto Fisiologico.

Italy—continued.

Siena.

p. Reale Accademia dei Fisiocritici.

Turin.

p. Laboratorio di Fisiologia.

AB. Reale Accademia delle Scienze.

Venice.

p. Ateneo Veneto.

AB. Reale Istituto Veneto di Scienze, Lettere ed Arti.

Japan.

Tokiô.

p. Asiatic Society of Japan.

AB. Imperial University.

Java.

Buitenzorg.

p. Jardin Botanique.

Luxembourg.

Luxembourg.

p. Société des Sciences Naturelles.

Malta.

p. Public Library.

Mauritius.

A. Royal Alfred Observatory.

p. Royal Society of Arts and Sciences.

Netherlands.

Amsterdam.

AB. Koninklijke Akademie van Wetenschappen.

p. K. Zoologisch Genootschap 'Natura Artis Magistra.'

Haarlem.

AB. Hollandsche Maatschappij der Wetenschappen.

p. Musée Teyler.

Leyden.

AB. University.

Rotterdam.

AB. Bataafsch Genootschap der Proefondervindelijke Wijsbe-
goerte.

Utrecht.

AB. Provinciaal Genootschap van Kunsten en Wetenschappen.

New Zealand.

Wellington.

AB. New Zealand Institute.

Norway.

Bergen.

AB. Bergenske Museum.

Christiania.

AB. Kongelige Norske Frederiks Universitet.

Tromsøe.

p. Museum.

Trondhjem.

AB. Kongelige Norske Videnskabers Selskab.

Portugal.

Coimbra.

AB. Universidade.

Lisbon.

AB. Academia Real das Sciencias.

p. Secção dos Trabalhos Geologicos de Portugal.

Oporto.

p. Annaes de Sciencias Naturaes.

Russia.

Dorpat.

AB. Université.

Ekaterinoslav.

p. School of Mines.

Irkutsk.

p. Société Impériale Russe de Géographie (Section de la Sibérie Orientale).

Kazan.

AB. Imperatorsky Kazansky Universitet.

p. Société Physico-Mathématique.

Kharkoff.

p. Section Médicale de la Société des Sciences Expérimentales.
Université de Kharkow.

Kieff.

p. Société des Naturalistes.

Kronstadt.

p. Compass Observatory.

Russia—continued.

Moscow.

AB. Le Musée Public.

B. Société Impériale des Naturalistes.

Odessa.

p. Société des Naturalistes de la Nouvelle-Russie.

Pulkowa.

A. Nikolai Haupt-Sternwarte.

St. Petersburg.

AB. Académie Impériale des Sciences.

B. Archives des Sciences Biologiques.

AB. Comité Géologique.

AB. Ministère de la Marine.

A. Observatoire Physique Central.

Scotland.

Aberdeen.

AB. University.

Edinburgh.

AB. Advocates' Library.

p. Geological Society.

p. Royal College of Physicians (Research Laboratory).

p. Royal Medical Society.

A. Royal Observatory.

p. Royal Physical Society.

p. Royal Scottish Society of Arts.

AB. Royal Society.

Glasgow.

AB. Mitchell Free Library.

p. Natural History Society.

p. Philosophical Society.

AB. University.

Servia.

Belgrade.

p. Académie Royale de Serbie.

Spain.

Cadiz.

A. Instituto y Observatorio de Marina de San Fernando.

Madrid.

p. Comisión del Mapa Geológico de España.

AB. Real Academia de Ciencias.

Sweden.

Gottenburg.

AB. Kongl. Vetenskaps och Vitterhets Samhälle.

Lund.

AB. Universitet.

Stockholm.

A. Acta Mathematica.

AB. Kongliga Svenska Vetenskaps-Akademie.

AB. Sveriges Geologiska Undersökning.

Upsala.

AB. Universitet.

Switzerland.

Basel.

p. Naturforschende Gesellschaft.

Bern.

AB. Allg. Schweizerische Gesellschaft.

p. Naturforschende Gesellschaft.

Geneva.

AB. Institut National Genevois.

AB. Société de Physique et d'Histoire Naturelle.

Lausanne.

p. Société Vandoise des Sciences Naturelles.

Neuchâtel.

p. Société des Sciences Naturelles.

Zürich.

AB. Das Schweizerische Polytechnikum.

p. Naturforschende Gesellschaft.

p. Sternwarte.

Tasmania.

Hobart.

p. Royal Society of Tasmania.

United States.

Albany.

AB. New York State Library.

Annapolis.

AB. Naval Academy.

United States—continued.

Austin.

- p.* Texas Academy of Sciences.

Baltimore.

- AB. Johns Hopkins University.

Berkeley.

- p.* University of California.

Boston.

- AB. American Academy of Sciences.
- B. Boston Society of Natural History.
- A. Technological Institute.

Brooklyn.

- AB. Brooklyn Library.

Cambridge.

- AB. Harvard University.
- B. Museum of Comparative Zoology.

Chapel Hill (N.C.).

- p.* Elisha Mitchell Scientific Society.

Charleston.

- p.* Elliott Society of Science and Art of South Carolina.

Chicago.

- AB. Academy of Sciences.
- p.* Astrophysical Journal.
- p.* Field Columbian Museum.
- A. Yerkes' Observatory (University of Chicago).

Davenport (Iowa).

- p.* Academy of Natural Sciences.

Granville (Ohio).

- p.* Denison University.—Journal of Comparative Neurology.

Ithaca (N.Y.).

- A. Journal of Physical Chemistry.
- p.* Physical Review (Cornell University).

Lawrence.

- p.* Kansas University.

Madison.

- p.* Wisconsin Academy of Sciences.

Mount Hamilton (California).

- A. Lick Observatory.

New Haven (Conn.).

- AB. American Journal of Science.
- AB. Connecticut Academy of Arts and Sciences.

United States—continued.**New York.**

- p.* American Geographical Society.
- A.* American Mathematical Society.
- p.* American Museum of Natural History.
- AB.* Columbia College Library.
- p.* New York Academy of Sciences.
- p.* New York Medical Journal.

Philadelphia.

- AB.* Academy of Natural Sciences.
- AB.* American Philosophical Society.
- p.* Franklin Institute.
- p.* University of Pennsylvania.
- p.* Wagner Free Institute of Science.

Rochester (N.Y.).

- p.* Academy of Science.

St. Louis.

- p.* Academy of Science.

Salem (Mass.).

- p.* American Association for the Advancement of Science.
- AB.* Essex Institute.

San Francisco.

- AB.* California Academy of Sciences.

Washington.

- AB.* Patent Office.
- AB.* Smithsonian Institution.
- AB.* United States Coast Survey.
- B.* United States Commission of Fish and Fisheries.
- p.* United States Department of Agriculture.
- A.* United States Department of Agriculture (Weather Bureau).
- AB.* United States Geological Survey.
- AB.* United States Naval Observatory.

West Point (N.Y.).

- AB.* United States Military Academy.
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CATALOGUE OF OBJECTS AND EXPERIMENTS EXHIBITED
AT THE CONVERSAZIONE HELD IN THE SOCIETY'S
APARTMENTS IN BURLINGTON HOUSE ON MAY 14,
1902.

1. *Exhibited by Mr. W. Rosenhain.*
Improved form of Thomson Coal-calorimeter.
2. *Exhibited by Mr. J. Mackenzie Davidson, M.B.*
 1. Stereoscopic X-Ray Transparencies and Negatives.
 2. X-Ray Photographs of a bullet fired from a revolver.
3. *Exhibited by The Badische Anilin and Soda Fabrik, Ludwigshafen-on-the-Rhine.*
Synthetic Indigo.
4. *Exhibited by Mr. R. L. Mond, M.A., and Dr. M. Wilderman.*
A new and improved type of Chronograph.
5. *Exhibited by Messrs. Sanger Shepherd & Co.*
 1. Apparatus for Natural Colour Photography, and examples of its applications.
 2. A New Camera for securing the three negatives through one lens at one exposure.
 3. A Camera for Photo-micrographic work fitted with colour filters for Natural Colour Photography.
6. *Exhibited by Mr. G. F. Herbert Smith.*
Three-circle Goniometer.
7. *Exhibited by The Department of Applied Mathematics, University College, London.*
 1. Curve-Adder, made by G. Coradi, of Zürich, for Prof. K. Pearson, F.R.S.
 2. Lecture Models, illustrating graphical treatment of girder-deflections.
 3. Circular Slide Rule and Planosphere.
Made about 1670, the former on Oughtred's system.
Tradition of the owners connects the instrument with Sir Isaac Newton.
 4. Slide Rule, designed by Prof. de Morgan, and believed by him to be first Circular Slide Rule.

8. *Exhibited by Prof. Silvanus P. Thompson, F.R.S.*

Gilbert of Colchester: Notabilia.

1. First folio Latin edition of "De Magnete," London, 1600.
2. Second Latin (quarto) edition of "De Magnete," Stettin, 1628.
3. Third Latin (quarto) edition of "De Magnete," Stettin, 1633.
4. Gilbert Club's English edition of "De Magnete," London, 1900.
5. Gilbert's "De Mundo Nostro," Antwerp, 1651.
6. Portrait and facsimile autographs of Dr. William Gilbert; medallion portrait of Dr. Gilbert, modelled by E. Dunkley, cobalt-plated.

9. *Exhibited by Prof. G. Forbes, F.R.S.*

Folding Range-finder, Infantry Model.

10. *Exhibited by Mr. J. Stanley Gardiner, M.A.*

1. Photographs of Natives of the Maldivé Archipelago.
2. Photographs of the Coral Reefs of the Maldivé Archipelago.

11. *Exhibited by Mr. E. A. Wilson, M.B., Assistant Surgeon and Naturalist to the National Antarctic Expedition.*

Coloured Sketches of Birds and Fishes obtained during the voyage of the "Discovery" to New Zealand.

12. *Exhibited by Mr. J. Gray, B.Sc.*

Cephalometric Instruments and Cephalograms.

13. *Exhibited by the Director, British Museum (Natural History).*

1. Models of Deep Sea Fishes (*Gastrostomus bairdi* and *Saccopharynx flagellum*).
2. Models of Breeds of Horses and Cattle.

14. *Exhibited by Mr. W. Gowland, on behalf of Col. Sir Edmund Antrobus, Bart.*

Stone Implements, &c., from Stonehenge.

1. Haches, long and short. Flint.
2. Hammerstones, with more or less sharp edges. Flint.
3. Hammerstones, more or less rounded. Flint.
4. Hammerstones, more or less rounded, weighing from 12 ounces to 5½ pounds. Compact Sarsen.
5. Large Mauls, weighing from 37 to 64 pounds. Compact Sarsen.

15. *Exhibited by Rev. H. H. Winwood, M.A., F.G.S., on behalf of Miss Breton.*
Water Colour Sketches, by Miss Breton, of Cañons, Glaciers and Waterfalls in the United States and British Columbia, showing the agents in Land-sculpture.
16. *Exhibited by Mr. T. Andrews, F.R.S.*
 1. Photo-micrographs of the Crystalline Structure of Platinum.
 2. Photo-micrographs of the Crystalline Structure of large Steel Ingots.
17. *Exhibited by Prof. A. H. Church, F.R.S.*
Series of Zircons from Ceylon, illustrating range of Density and Colour.
18. *Exhibited by Dr. C. A. MacMunn.*
 1. The Spectrum of a Zircon.
 2. Spongioporphyry: the colouring matter of *Suberites Wilsoni*, an Australian Sponge.
19. *Exhibited by Prof. H. A. Miers, F.R.S.*
Attempts to reproduce polarisation effects by three-colour printing.
20. *Exhibited by Prof. J. A. Fleming, F.R.S.*
Experiments illustrating the Effect of Ultra-Violet Light on the Electric Discharge.
21. *Exhibited by Mr. J. Mackenzie Davidson, M.B.*
The Development of Photographic Negatives in ordinary light.
22. *Exhibited by Sir Norman Lockyer, K.C.B., F.R.S.*
Spectra of Metallic Poles sparked in water and air, and spectra of Meteorites, Rocks, Minerals and Ashes of Plants.
23. *Exhibited by The Cambridge Scientific Instrument Company, Limited.*
Whipple's Temperature Indicator.
24. *Exhibited by Dr. Dawson Turner.*
Effects of Ultra-Violet Radiation.
25. *Exhibited by Mr. C. E. Stromeyer.*
Experimental Illustration of one cause of Steam Pipe Explosions.
26. *Exhibited by Mr. W. R. Pidgeon, M.A.*
A new Electrical Influence Machine suitable for Campaign Work.

27. *Exhibited by Mr. W. A. Shenstone, F.R.S., and Mr. J. W. Gifford.*
1. Large Prism of Vitreous Silica.
 2. Lenses of Fluorite and Quartz.
28. *Exhibited by Prof. Wyndham Dunstan, F.R.S.*
1. Poisonous Fodder-plants and Food-grains, and their Cyanogenetic Glucosides.
 2. Indian and Egyptian Drugs and their Constituents.
 3. India-rubber from Bahr el Ghazal and Zululand. Varieties of Gutta-percha from Sarawak, Ceylon, and West Africa.
 4. Coal, Iron Ores, Mica and other Minerals from India, British Central Africa, Nigeria, Somaliland, Trinidad, and the Grecian Archipelago.
 5. Specimens of Tobacco cultivated in Bermuda, with photographs of the crops.
 6. Specimens of Indian and Australian Gums and Resins.
29. *Exhibited by Mr. W. M. Mordey, and Mr. G. L. Fricker.*
- Electricity Meter for either Direct Current or Alternate Current.
30. *Exhibited by Prof. W. Ramsay, F.R.S.*
- The Colour of a Krypton Tube.
31. *Exhibited by Mr. George Beilby.*
- Film Structure in metals and other plastic solids.
32. *Exhibited by Prof. A. Schuster, F.R.S.*
1. The Spectrum of Iron in the Flame of the Bunsen Burner.
 2. A Rowland Grating of one metre focus.
33. *Exhibited by The Marine Biological Association.*
- The Scales of Fishes as an Index of Age.
34. *Exhibited by Mr. A. C. Cossor.*
1. A "Braun" Tube for Cathode Rays.
 2. A New Therapeutic X-Ray Tube.
35. *Exhibited by Mr. J. E. Stead.*
1. Micro-structure of Iron, and Meteoric Irons containing Free Phosphides and Carbides of Iron and Nickel.
 2. The Micro-constituents of Steel.
36. *Exhibited by The Cambridge Observatory.*
- The Solar Parallax, from observations of the planet Eros. (Preliminary Results.)

37. *Exhibited by The Royal Astronomical Society.*
Photographs of the Nebula surrounding Nova Persei, photographed by Mr. G. W. Ritchey, Yerkes Observatory, U.S.A.
38. *Exhibited by St. John's College, Cambridge, through Prof. R. A. Sampson.*
Manuscripts relating to the discovery of Neptune, by the late Prof. J. Couch Adams, F.R.S.
39. *Exhibited by Mr. A. Vernon Harcourt, F.R.S.*
Apparatus for the Regulated Administration of Chloroform.
40. *Exhibited by Mr. J. E. Petavel and Capt. J. Bruce-Kingsmill, R.G.A.*
1. A Recording Pressure Gauge for Artillery.
2. A Recording Pressure Gauge for Low Pressure Explosions (suitable for Gas Engine Research and Experimental Physics), shown by Mr. J. E. Petavel.
41. *Exhibited by The National Physical Laboratory.*
Plane Mirror given to the Laboratory by Dr. Common, F.R.S.
42. *Exhibited by Mr. F. Enock, F.L.S.*
Living specimens of Oviparous Parasites (Mymaridæ), together with Larvæ and Pupæ in the eggs of Liburnia (Frog-hoppers).
43. *Exhibited by Mr. W. E. Hoyle, M.A.*
Luminous Organs in *Pterygioteuthis margaritifera*, a Mediterranean Cephalopod.
44. *Exhibited by Lieut.-Colonel Bruce, F.R.S.*
Trypanosoma Theileri—a new species of parasite discovered in the blood of cattle in South Africa.
45. *Exhibited by Mr. J. Everett Dutton, M.B., on behalf of the School of Tropical Medicine, Liverpool.*
Specimen of a Trypanosoma found in the blood of man.
46. *Exhibited by The Director, British Museum (Natural History).*
Newly discovered Fossil Mammals and Reptiles from Egypt.
47. *Exhibited by Messrs. R. and J. Beck, Ltd.*
The "Imperial" Microscope, with mechanical adjustments for critical work, showing Grayson's micrometer rulings in realgar up to 60,000 lines to the inch.

48. *Exhibited by Dr. A. C. Haddon, F.R.S.*
A Collection of Ear-rings from British New Guinea.
49. *Exhibited by Mr. J. J. Lister, F.R.S., and Mr. A. Hutchinson, M.A.*
Microscopic Preparations of *Astrosclera Willeyana*, with specimens illustrating the determination of the mineral constituent of the skeleton by Meigen's method.
50. *Exhibited by Mr. E. T. Newton, F.R.S.*
Otoliths of Fishes.
51. *Exhibited by Prof. W. K. Huntington.*
1. Tilting Stage for the Microscope.
2. Optical Bench for Metallurgical Work.
52. *Exhibited by Dr. A. Muirhead.*
Demonstration of Retransmission on Submarine Telegraph Cables (Cable Relaying).
53. *Exhibited by Mr. W. H. Dines.*
Kite and Winding-in Apparatus for raising Meteorological Instruments.
54. *Exhibited by Prof. E. Wilson.*
The distribution of Electric Currents induced in a solid Iron Cylinder when rotated in a magnetic field.
- *55. *Exhibited by Sir Henry Trueman Wood.*
The Application of Photography to the production of Pictures in Colours.
- *56. *Exhibited by Dr. R. D. Roberts.*
Lantern Slides in natural colours of the Grand Cañon of the Colorado, the Sierra Nevada, California, and the Yellowstone Park.

* Lecture Room Demonstrations.

THE CROONIAN LECTURES.

LIST OF LECTURERS AND SUBJECTS.

1738. Alexander Stuart.
"On the Motion of the Heart, founded on some Anatomical
Observations and Experiments."
Phil. Trans., Vol. 40, Supplement; Vol. 41, p. 675.
1739. Frank Nicholls.
"An Enquiry into Muscular Motion."
Journal Book, Vol. XVIII. p. 70.
1740. Alexander Stuart.
"On the Peristaltic Motion of the Intestines."
Journal Book, Vol. XVIII. p. 227—9.
1740. Alexander Stuart.
"Microscopical Observations on several parts of live Frogs."
Journal Book, Vol. XVIII. p. 290.
1741. James Douglas.
"Description of the several Muscles, Membranes and parts
belonging to the Uvula of the Palate, and concerned in its
action; as also of the several parts subservient to the uses
of the Tuba Eustachiana."
Journal Book, Vol. XVIII. p. 377.
1742. James Douglas.
"Description and Structure of the Human Bladder, with
the Uses of its Muscles and Membranes."
Journal Book, Vol. XVIII. p. 419.
- 1744.* James Parsons.
"An Introductory Discourse on Muscular Motion."
Phil. Trans., Vol. 43, Supplement.
1745. James Parsons.
"On Muscular Motion." Phil. Trans., Vol. 43, Supplement.
1746. James Parsons.
"Description of the several Muscles of the Face; with their
particular Functions and Uses."
Phil. Trans., Vol. 44, Part I., Supplement.

* Lecture revived, "the deficiency of the Fund being made good by the Rents."

1747. Browne Langrish.

"On the Theory of Muscular Motion."

Phil. Trans., Vol. 44, Part II., Supplement.

1750. James Parsons.

"On Muscular Motion."

Journal Book, Vol. XXI. p. 357.

1751. James Parsons.

"Critical Remarks upon the Motion and Uses of the Human Pelvis."

Journal Book, Vol. XXI. pp. 641, 652.

1752 and 1753. Not recorded.

1754 to 1758. Charles Morton.

Minutes of Council, Vol. IV. pp. 168, 189 :
and Annual Accounts.

1759 and 1760. Not recorded.

1761. Charles Morton. (?)

Annual Accounts.

1762 to 1774. Not recorded.

1775 and 1776. John Hunter.

Minutes of Council, Vol. VI. pp. 283, 335.

1777 to 1781. John Hunter.

"On the Construction and Application of Muscles and the Power by which they are actuated."

Journal Book, Vol. XXXI. p. 194 :
and Annual Accounts, 1781.

1782. John Hunter.

"On the Density and Firmness of a Muscle as contributing to its Strength and Agility."

Journal Book, Vol. XXXI. p. 194.

1783. Not recorded.

1784. Foart Simmons.

"On the Irritability of the Muscular Fibres."

Journal Book, Vol. XXXI. p. 642.

1785. Edward Whittaker Grey.

"An Examination into Haller's Theory of Muscular Motion."

Journal Book, Vol. XXXII. p. 259.

1786. Edward Whittaker Grey.

"On the Effects of different kinds of Salts applied as Stimulants on the Muscles."

Journal Book, Vol. XXXII. p. 469.

1787. George Fordyce.

"On Muscular Motion."

Phil. Trans., Vol. 78, p. 23.

1788. Sir Gilbert Blane, Bart.
"On the Nature of the Muscles, and on the Theory of Muscular Motion."
Journal Book, Vol. XXXIII. p. 268.
1789. Sir William Blizard.
"On the Theory of Muscular Motion."
Journal Book, Vol. XXXIV. p. 9.
1790. Sir Everard Home, Bart.
"On the Mechanism employed in producing Muscular Motion."
Journal Book, Vol. XXXIV. p. 200
1791. Matthew Baillie.
"A general view of the Nature of the Muscles, and an enumeration of the most striking facts connected with the Theory of their Motion."
Journal Book, Vol. XXXIV. p. 419.
1792. Not recorded.
1793. Sir Everard Home, Bart.*
"On Mr. Hunter's Experiments to ascertain whether the Crystalline Humour of the Eye be muscular."
Journal Book, Vol. XXXV. p. 166.
1794. Sir Everard Home, Bart.
"On the Crystalline Humour of the Eye." Phil. Trans. 1795.
1795. Sir Everard Home, Bart.
"On the Mechanism employed in producing Muscular Motion."
Phil. Trans. 1795.
1796. Sir Everard Home, Bart.
"On the Crystalline Humour of the Eye." Phil. Trans. 1796.
1797. John Abernethy.
"A general Review of the latest Opinions relative to Animal Life and Motion." Journal Book, Vol. XXXVI. p. 340.
1798. Sir Everard Home, Bart.
"Experiments and Observations upon the Structure of Nerves."
Phil. Trans. 1799.
1799. Sir Everard Home, Bart.
"On the Structure and Uses of the Membrana Tympani."
Phil. Trans. 1800.
1800. Sir Everard Home, Bart.
"On the Irritability of Nerves." Phil. Trans. 1801.

* The decease of Mr. Hunter took place before the Lecture, on which he was engaged by appointment of the Council, was completed.

1801. Sir Everard Home, Bart.

"On the power of the Eye to adjust itself to different distances when deprived of the Crystalline Lens."

Phil. Trans. 1802.

1802. Not recorded.

1803. John Pearson.

"On Muscular Motion."

Journal Book, Vol. XXXVIII. p. 137.

1804. Sir Anthony Carlisle.

"On Muscular Motion."

Phil. Trans. 1805.

1805. Sir Anthony Carlisle.

"On the Arrangement and Mechanical Action of the Muscles of Fishes."

Phil. Trans. 1806.

1806. John Pearson.

"Remarks on Muscular Power, and on some of the circumstances by which it is increased, diminished, or finally abolished."

Journal Book, Vol. XXXIX. p. 176.

1807. Sir Anthony Carlisle.

"On the Natural History and Chemical Analysis of the substances which constitute the Muscles of Animals."

Journal Book, Vol. XXXIX. p. 451.

1808. Thomas Young.

"On the Functions of the Heart and Arteries."

Phil. Trans. 1809.

1809. William Hyde Wollaston.

"Observations on the Mode of Action of Voluntary Muscles, and on the causes which derange, and assist, the Action of the Heart and Blood Vessels."

Phil. Trans. 1810.

1810. Benjamin Collins Brodie.

"Physiological Researches, respecting the Influence of the Brain on the Action of the Heart, and on the Generation of Animal Heat."

Phil. Trans. 1811.

1811 and 1812. Not recorded.

1813. Benjamin Collins Brodie.

"On the Influence of the Nervous System on the Action of the Muscles in general and of the Heart in particular."

Journal Book, Vol. XI.I. p. 347.

1814 to 1816. Not recorded.

1817. Sir Everard Home, Bart.

"On the Changes the Blood undergoes in the act of Coagulation."

Phil. Trans. 1818.

1818. Sir Everard Home, Bart.

"On the Conversion of Pus into Granulations, or New Flesh."
Phil. Trans. 1819.

1819 Sir Everard Home, Bart.

"A further Investigation of the component parts of the Blood."
Phil. Trans. 1820.

1820. Sir Everard Home, Bart.

"Microscopical Observations on the following subjects:—On the Brain and Nerves; showing that the Materials of which they are composed exist in the Blood; on the Discovery of Valves in the branches of the *vas brevis*, lying between the villous and muscular coats of the Stomach; on the Structure of the Spleen."
Phil. Trans. 1821.

1821. Sir Everard Home, Bart.

"On the Anatomical Structure of the Eye; illustrated by Microscopical Drawings, executed by F. Bauer."
Phil. Trans. 1822.

1822. Francis Bauer.

"Microscopical Observations on the Suspension of the Muscular Motions of the *Vibrio Tritici*."
Phil. Trans. 1823.

1823. Sir Everard Home, Bart.

"On the Internal Structure of the Human Brain, when examined in the Microscope, as compared with that of Fishes, Insects and Worms."
Phil. Trans. 1824.

1824. Sir Everard Home, Bart.

"On the existence of Nerves in the Placenta."
Phil. Trans. 1825.

1825. Sir Everard Home, Bart.

"On the Structure of a Muscular Fibre from which are derived its Elongation and Contraction."
Phil. Trans. 1826.

1826. Sir Everard Home, Bart.

"An Enquiry into the mode by which the Propagation of the Species is carried on, in the Common Oyster, and in the large Fresh-water Muscle."
Phil. Trans. 1827.

1827. Sir Everard Home, Bart.

"On the Muscles peculiar to Organs of Sense in particular Quadrupeds and Fishes."
Journal Book, Vol. XLV. p. 143.

1828. Not appointed.

1829. Sir Everard Home, Bart.

"A Report on the Peculiarities met with in the Stomach of the Zariifa."
Journal Book, Vol. XLV. p. 580.

1830 to 1856. Not appointed.

1857. James Paget.

“ On the Cause of the Rhythmic Action of the Heart.”
Proceedings, Vol. 8.

1858. Thomas Henry Huxley.

“ On the Theory of the Vertebrate Skull.” Proceedings, Vol. 9.

1859. Not appointed.

1860. James Bell Pettigrew.

“ On the Arrangement of the Muscular Fibres of the Ventricular Portion of the Heart of the Mammal.”
Proceedings, Vol. 10.
Phil. Trans., 1864.

1861. Charles Édouard Brown-Séquard.

“ On the Relations between Muscular Irritability, Cadaveric Rigidity, and Putrefaction.” Proceedings, Vol. 11.

1862. Albert Kölliker.

“ On the Termination of Nerves in Muscles, as observed in the Frog: and on the disposition of the Nerves in the Frog's Heart.”
Proceedings, Vol. 12.

1863. Joseph Lister.

“ On the Coagulation of the Blood.” Proceedings, Vol. 12.

1864. Hermann Helmholtz.

“ On the Normal Motions of the Human Eye in relation to Binocular Vision.” Proceedings, Vol. 13.

1865. Lionel S. Beale.

“ On the ultimate Nerve-fibres distributed to Muscle and some other Tissues, with Observations upon the Structure and probable Mode of Action of a Nervous Mechanism.”
Proceedings, Vol. 14.

1866. Not appointed.

1867. J. S. Burdon-Sanderson.

“ On the Influence exercised by the Movements of Respiration on the Circulation of the Blood.” Phil. Trans., Vol 157.

1868. Not appointed.

1869. Not appointed.

1870. Augustus V. Waller.

“ On the Results of the Method, introduced by the Author, of investigating the Nervous System, more especially as applied to the Elucidation of the Functions of the Pneumogastric and Sympathetic Nerves in Man.”
Proceedings, Vol. 18.

1871 and 1872. Not appointed.

1873. Benjamin Ward Richardson.
"On Muscular Irritability after Systemic Death."
Proceedings, Vol. 21.
1874. David Ferrier.
"The Localization of Function in the Brain."
Proceedings, Vol. 22 (Abstr.).
1875. David Ferrier.
"Experiments on the Brain of Monkeys. Second Series."
Phil. Trans. 1875.
1876. G. J. Romanes.
"Preliminary Observations on the Locomotor System of Medusæ."
Phil. Trans. 1876.
1877. J. S. Burdon-Sanderson and F. J. M. Page.
"On the Mechanical Effects, and on the Electrical Disturbance, consequent on Excitation of the Leaf of *Dionæa muscipula*."
Proceedings, Vol. 25.
1878. H. N. Moseley.
"On the Structure of the Stylasteridæ: a Family of the Hydroid Stony Corals."
Phil. Trans. 1878.
1879. W. K. Parker.
"On the Structure and Development of the Skull in the Lacertilia. Part I. On the Skull of the Common Lizards (*Lacerta agilis*, *L. viridis*, and *Zootoca vivipara*)."
Phil. Trans. 1879.
1880. Rev. S. Haughton.
"On some Elementary Principles in Animal Mechanics, No. IX. The Relation between the Maximum Work done, the Time of Lifting, and the Weights lifted by the Arms."
Proceedings, Vol. 30.
1881. G. J. Romanes and J. C. Ewart.
"Observations on the Locomotor System of Medusæ."
Phil. Trans. 1881.
1882. W. H. Gaskell.
"On the Rhythm of the Heart of the Frog, and on the Nature of the Action of the Vagus Nerve."
Phil. Trans. 1882.
1883. H. N. Martin.
"On the Direct Influence of Gradual Variations of Temperature upon the Rate of Beat of the Dog's Heart."
Phil. Trans. 1883.
- 1884 and 1885. Not appointed.
1886. L. C. Wooldridge.
"The Coagulation of the Blood."
Proceedings, Vol. 40.

1887. H. G. Seeley.
 "On *Pariasaurus bombidens* (Owen) and the Significance of its Affinities to Amphibians, Reptiles, and Mammals."
 Phil. Trans., B, 1888.
1888. W. Kühne (Heidelberg).
 "Ueber die Entstehung der Vitalen Bewegung."
 Proceedings, Vol. 44.
1889. Dr. Roux (Institut Pasteur).
 "Les Inoculations Préventives." Proceedings, Vol. 46.
1890. H. Marshall Ward.
 "The Relations between Host and Parasite in certain Epidemic Diseases of Plants." Proceedings, Vol. 47.
1891. Francis Gotch and Victor Horsley.
 "On the Mammalian Nervous System; its Functions and their Localisation determined by an Electrical Method."
 Phil. Trans., B, Vol. 182.
1892. Angelo Mosso (Turin).
 "Les Phénomènes psychiques et la Température du Cerveau."
 Phil. Trans., B, Vol. 183.
1893. Rudolf Virchow (Berlin).
 "The Position of Pathology among Biological Studies."
 Proceedings, Vol. 53.
1894. S. Ramón y Cajal (Madrid).
 "La fine Structure des Centres Nerveux." Proceedings, Vol. 55.
1895. T. W. Engelmann (Utrecht).
 "On the Nature of Muscular Contraction."
 Proceedings, Vol. 57.
1896. Augustus D. Waller.
 "Observations on Isolated Nerve." Phil. Trans., B, Vol. 188.
1897. Charles S. Sherrington.
 "The Mammalian Spinal Cord as an Organ of Reflex Action."
 Phil. Trans., B, Vol. 190.
1898. Wilhelm Pfeffer (Leipzig).
 "The Nature and Significance of Functional Metabolism in the Plant." Proceedings, Vol. 63.
1899. J. S. Burdon Sanderson.
 "On the Relation of Motion in Animals and Plants to the Electrical Phenomena which are associated with it."
 Proceedings, Vol. 65.
1900. Paul Ehrlich (Frankfort-on-M.).
 "On Immunity with Special Reference to Cell Life."
 Proceedings, Vol. 66.
1901. C. Lloyd Morgan.
 "Studies in Visual Sensation." Proceedings, Vol. 68.
1902. Arthur Gamgee.
 "On certain Chemical and Physical Properties of Hæmoglobin."
 Proceedings, Vol. 70.

THE BAKERIAN LECTURES.

LIST OF LECTURERS AND SUBJECTS.

1775. Peter Woulfe.

“Experiments made in order to ascertain the nature of some Mineral Substances, and in particular to see how far the Acids of Sea-Salt and of Vitriol contribute to Mineralize Metallic and other Substances.”—Part I.

Journal Book, Vol. XXIX. p. 135.

1776 and 1777. Peter Woulfe.

1778. John Ingen-Housz.

“Electrical Experiments to explain how far the Phenomena of the Electrophorus may be accounted for by Dr. Franklin's Theory of Positive and Negative Electricity.”

Phil. Trans., Vol. 68.

1779. John Ingen-Housz.

“Improvements in Electricity.”

Phil. Trans., Vol. 69.

1780. Tiberius Cavallo.

“Thermometrical Experiments and Observations.”

Phil. Trans., Vol. 70.

1781. Tiberius Cavallo.

“An Account of some Thermometrical Experiments.”

Phil. Trans., Vol. 71.

1782. Tiberius Cavallo.

“An Account of some Experiments relating to the Property of Common and Inflammable Airs of pervading the Pores of Paper.”

Journal Book, Vol. XXXI. p. 203.

1783. Tiberius Cavallo.

“Description of an improved Air Pump.”

Journal Book, Vol. XXXI. p. 401.

1784. Tiberius Cavallo.

“An Account of some Experiments made with the new improved Air Pump.”

Journal Book, Vol. XXXI. p. 631.

1785. Tiberius Cavallo.

“Magnetical Experiments and Observations.”

Phil. Trans., Vol. 76.

1786. Tiberius Cavallo.
 "Magnetical Experiments and Observations."
 Phil. Trans., Vol. 77.
1787. Tiberius Cavallo.
 "Of the Methods of manifesting the Presence, and ascertaining the Quality, of small Quantities of Natural or Artificial Electricity."
 Phil. Trans., Vol. 78.
1788. Tiberius Cavallo.
 "On an Improvement in the Blow Pipe."
 Journal Book, Vol. XXXIII. p. 237.
1789. Tiberius Cavallo.
 "Magnetical Experiments and Observations."
 Journal Book, Vol. XXXIV. p. 3.
1790. Tiberius Cavallo.
 "A Description of a new Pyrometer."
 Journal Book, Vol. XXXIV. p. 208.
1791. Tiberius Cavallo.
 "On the Method of Measuring Distances by means of Telescopes furnished with Micrometers."
 Journal Book, Vol. XXXIV. p. 429.
1792. Tiberius Cavallo.
 "An Account of the Discoveries concerning Muscular Motion, which have been lately made, and are commonly known by the name of Animal Electricity."
 Journal Book, Vol. XXXIV. p. 609.
1793. George Fordyce.
 "An Account of a New Pendulum."
 Phil. Trans. 1794.
1794. Samuel Vince.
 "Observations on the Theory of the Motion and Resistance of Fluids; with a Description of the Construction of Experiments, in order to obtain some fundamental Principles."
 Phil. Trans. 1795.
- 1795 and 1796. Samuel Vince. (?)
1797. Samuel Vince.
 "Experiments upon the Resistance of Bodies moving in Fluids."
 Phil. Trans. 1798.
1798. Samuel Vince.
 "Observations upon an unusual Horizontal Refraction of the Air; with Remarks on the Variations to which the lower Parts of the Atmosphere are sometimes subject."
 Phil. Trans. 1799.

1799. Samuel Vince. (?)
1800. Thomas Young.
"On the Mechanism of the Eye." Phil. Trans. 1801.
1801. Thomas Young.
"On the Theory of Light and Colours." Phil. Trans. 1802.
1802. William Hyde Wollaston.
"Observations on the Quantity of Horizontal Refraction; with
Method of measuring the Dip at Sea." Phil. Trans. 1803.
1803. Thomas Young.
"Experiments and Calculations relative to Physical Optics." Phil. Trans. 1804.
1804. Samuel Vince.
"Observations on the Hypotheses which have been assumed to
account for the cause of Gravitation from Mechanical
Principles." Journal Book, Vol. XXXVIII. p. 334.
1805. William Hyde Wollaston.
"On the Force of Percussion." Phil. Trans. 1806.
1806. Sir Humphry Davy, Bart.
"On some Chemical Agencies of Electricity." Phil. Trans. 1807.
1807. Sir Humphry Davy, Bart.
"On some new Phenomena of Chemical Changes produced by
Electricity, particularly the Decomposition of the fixed
Alkalies, and the Exhibition of the new Substances which
constitute their Bases." Phil. Trans. 1808.
1808. Sir Humphry Davy, Bart.
"An Account of some new Analytical Researches on the Nature
of certain Bodies, particularly the Alkalies, Phosphorus,
Sulphur, Carbonaceous Matter, and the Acids hitherto
undecomposed; with some general Observations on
Chemical Theory." Phil. Trans. 1809, pp. 39, 450.
1809. Sir Humphry Davy, Bart.
"On some new Electro-Chemical Researches, on various objects,
particularly the Metallic Bodies from the Alkalies and
Earths; and on some Combinations of Hydrogen." Phil. Trans. 1810.
1810. Sir Humphry Davy, Bart.
"On some of the Combinations of Oxymuriatic Gas and
Oxygen, and on the Chemical Relations of these Principles
to Inflammable Bodies." Phil. Trans. 1811.
1811. Sir Humphry Davy, Bart. (?)

1812. William Hyde Wollaston.
 "On the Elementary Particles of certain Crystals."
 Phil. Trans. 1813.
1813. William Thomas Brande.
 "On some new Electro-Chemical Phenomena."
 Phil. Trans. 1814.
- 1814 to 1818. No record.
1819. William Thomas Brande.
 "On the Composition and Analysis of the inflammable Gaseous
 Compounds resulting from the destructive Distillation of
 Coal and Oil; with some Remarks on their relative heating
 and illuminating power."
 Phil. Trans. 1820.
1820. Captain Henry Kater.
 "On the best kind of Steel, and form, for a Compass
 Needle."
 Phil. Trans. 1821.
1821. Captain Edward Sabine.
 "An Account of Experiments to determine the Amount of the
 Dip of the Magnetic Needle in London, in August 1821;
 with Remarks on the Instruments which are usually
 employed in such determinations."
 Phil. Trans. 1822.
1822. No record.
1823. John F. W. Herschel.
 "On certain Motions produced in Fluid Conductors when
 transmitting the Electric Current."
 Phil. Trans. 1824.
- 1824 to 1825. No record.
1826. Sir Humphry Davy, Bart.
 "On the Relations of Electrical and Chemical Changes."
 Phil. Trans. 1826.
1827. George Pearson.
 "Researches to discover the Faculties of Pulmonary Absorption
 with respect to Charcoal."
 Journal Book, Vol. XLV. p. 201.
1828. William Hyde Wollaston.
 "On a Method of rendering Platina malleable."
 Phil. Trans. 1829.
1829. Michael Faraday.
 "On the Manufacture of Glass for Optical Purposes."
 Phil. Trans. 1830.
1830. No record.

1831. No record.
1832. Michael Faraday.
"Experimental Researches in Electricity; Second Series."
Abstracts of Papers, Vol. III. p. 95.
1833. Samuel Hunter Christie.
"Experimental Determination of the Laws of Magneto-Electric
Induction in different masses of the same metal, and of its
intensity in different metals."
Abstracts of Papers, Vol. III. p. 177.
1834. Not appointed.
1835. Charles Lyell.
"On the Proofs of a gradual Rising of the Land in certain parts
of Sweden." Phil. Trans. 1835.
1836. John William Lubbock.
"On the Tides of the Port of London." Phil. Trans. 1836.
1837. William Henry Fox Talbot.
"Further Observations on the Optical Phenomena of Crystals."
Phil. Trans. 1837.
1838. James Ivory.
"On the Theory of the Astronomical Refractions."
Phil. Trans. 1838.
1839. William Snow Harris.
"Inquiries concerning the Elementary Laws of Electricity."
Phil. Trans. 1839.
1840. George Biddell Airy.
"On the Theoretical Explanation of an apparent new Polarity
of Light." Phil. Trans. 1840.
1841. George Newport.
"On the Organs of Reproduction and the Development of the
Myriapoda." Phil. Trans. 1841.
1842. James David Forbes.
"On the Transparency of the Atmosphere and the Law of
Extinction of the Solar Rays in passing through it."
Phil. Trans. 1842.
1843. Charles Wheatstone.
"An Account of several new Instruments and Processes for
determining the Constants of a Voltaic Circuit."
Phil. Trans. 1843.

1844. Richard Owen.

"A Description of certain Belemnites, preserved, with a great proportion of their soft parts, in the Oxford Clay, at Christian-Malford, Wilts." Phil. Trans. 1844.

1845. Charles Giles Bridle Daubeny.

"Memoir on the Rotation of Crops, and on the Quantity of Inorganic Matters abstracted from the Soil by various Plants under different circumstances." Phil. Trans. 1845.

1846. James David Forbes.

"Illustrations of the Viscous Theory of Glacier Motion." Phil. Trans. 1846.

1847. William Robert Grove.

"On certain Phenomena of Voltaic Ignition and the Decomposition of Water into its constituent Gases by Heat." Phil. Trans. 1847.

1848. Rev. William Whewell.

"Researches on the Tides." Thirteenth Series. On the Tides of the Pacific, and on the Diurnal Inequality. Phil. Trans. 1848.

1849. Michael Faraday.

"Experimental Researches in Electricity." Twenty-Second Series. Phil. Trans. 1849.

1850. Thomas Graham.

"On the Diffusion of Liquids." Phil. Trans. 1850.

1851. Michael Faraday.

"Experimental Researches in Electricity." Twenty-Fourth Series. Phil. Trans. 1851.

1852. Charles Wheatstone.

"Contributions to the Physiology of Vision. Part II. On some remarkable and hitherto unobserved Phenomena of Binocular Vision (continued)." Phil. Trans. 1852.

1853. Col. Edward Sabine.

"On the Influence of the Moon on the Magnetic Declination at Toronto, St. Helena, and Hobartou." Phil. Trans. 1853.

1854. Thomas Graham.

"On Osmotic Force." Phil. Trans. 1854.

1855. John Tyndall.

"On the Nature of the Force by which Bodies are repelled from the Poles of a Magnet; to which is prefixed an account of some experiments on Molecular Influences." Phil. Trans. 1855.

1856. William Thomson.
"On the **Electrodynamic Qualities of Metals.**"
Phil. Trans. 1856.
1857. Michael Faraday.
"Experimental Relations of Gold (and other metals) to Light."
Phil. Trans. 1857.
1858. John Peter Gassiot.
"On the Stratifications and Dark Band in Electrical Discharges
as observed in Torricellian Vacua." Phil. Trans. 1858.
1859. Edward Frankland.
"Researches on Organo-metallic Bodies." Fourth Memoir.
Phil. Trans. 1859.
1860. William Fairbairn.
"Experimental Researches to determine the Density of Steam
at different Temperatures, and to determine the Law of
Superheated Steam." Phil. Trans. 1860.
1861. John Tyndall.
"On the Absorption and Radiation of Heat by Gases and
Vapours, and on the Physical Connection of Radiation,
Absorption and Conduction." Phil. Trans. 1861.
1862. Warren De La Rue.
"On the Total Solar Eclipse of July 18, 1860, observed at
Rivabellosa, near Miranda de Ebro, in Spain."
Phil. Trans. 1862.
1863. Henry Clifton Sorby.
"On the Direct Correlation of Mechanical and Chemical
Forces." Proceedings, Vol. 12, 1863.
1864. John Tyndall.
"Contributions to Molecular Physics: being the Fifth Memoir
of Researches on Radiant Heat." Phil. Trans. 1864.
1865. Henry Enfield Roscoe.
"On a Method of Meteorological Registration of the Chemical
Action of Total Daylight." Phil. Trans. 1865.
1866. James Clerk Maxwell.
"On the Viscosity or Internal Friction of Air and other Gases."
Phil. Trans. 1866.
1867. Frederick Augustus Abel.
"Researches on Gun-Cotton. (Second Memoir.) On the
Stability of Gun-Cotton." Phil. Trans. 1867.

1868. Henry Enfield Roscoe.
 "Researches on Vanadium." Phil. Trans. 1868.
1869. Thomas Andrews.
 "The Continuity of the Gaseous and Liquid States of Matter." Phil. Trans. 1869.
1870. John William Dawson.
 "On the Pre-Carboniferous Flora of North Eastern America, and more especially on that of the Erian (Devonian) Period." Proceedings, Vol. 18.
1871. Charles William Siemens.
 "On the Increase of Electrical Resistance in Conductors with Rise of Temperature, and its Application to the Measure of Ordinary and Furnace Temperatures: also on a simple Method of measuring Electrical Resistances." Proceedings, Vol. 19.
1872. William Kitchen Parker.
 "On the Structure and Development of the Skull of the Salmon (*Salmo salar*, L.)." Proceedings, Vol. 20.
1873. Earl of Rosse.
 "On the Radiation of Heat from the Moon, the Law of its Absorption by our Atmosphere, and its variation in Amount with her Phases." Proceedings, Vol. 21.
1874. J. Norman Lockyer.
 "Researches in Spectrum Analysis in connection with the Spectrum of the Sun." Part III. Phil. Trans. 1874.
1875. William Grylls Adams.
 "On the Forms of Equipotential Curves and Surfaces and on Lines of Flow." Proceedings, Vol. 24.
1876. Thomas Andrews.
 "On the Gaseous State of Matter." Proceedings, Vol. 24.
1877. William Crawford Williamson.
 "On the Organization of the Fossil Plants of the Coal Measures." Part IX. Phil. Trans. 1878.
1878. William Crookes.
 "On Repulsion resulting from Radiation. Part V." Phil. Trans. 1878.
1879. William Crookes.
 "On the Illumination of Lines of Molecular Pressure and the Trajectory of Molecules." Phil. Trans. 1879.

1880. Captain William de W. Abney.
"On the Photographic Method of Mapping the least refrangible end of the Solar Spectrum." Phil. Trans. 1880.
1881. John Tyndall.
"Action of free Molecules on Radiant Heat, and its conversion thereby into sound." Phil. Trans. 1882.
1882. Heinrich Debus.
"On the Chemical Theory of Gunpowder." Phil. Trans. 1882.
1883. William Crookes.
"On Radiant Matter Spectroscopy: the Detection and wide Distribution of Yttrium." Phil. Trans. 1883.
1884. Arthur Schuster.
"Experiments on the Discharge of Electricity through Gases. Sketch of a Theory." Proceedings, Vol. 37.
1885. William Huggins.
"On the Corona of the Sun." Proceedings, Vol. 39.
1886. Captain William de W. Abney and Major-General Edward Robert Festing.
"Colour Photometry." Phil. Trans. 1886.
1887. Joseph John Thomson.
"On the Dissociation of some Gases by the Electric Discharge." Proceedings, Vol. 42 (Abstract).
1888. J. Norman Lockyer.
"Suggestions on the Classification of the various Species of Heavenly Bodies. A Report to the Solar Physics Committee." Proceedings, Vol. 44.
1889. Arthur William Rücker and Thomas Edward Thorpe.
"A Magnetic Survey of the British Isles for the Epoch January 1, 1886." Phil. Trans., A, Vol. 181.
1890. Arthur Schuster.
"The Discharge of Electricity through Gases. Preliminary Communication." Proceedings, Vol. 47.
891. George Howard Darwin.
"On Tidal Prediction." Phil. Trans., A, Vol. 182.
892. James Thomson.
"On the Grand Currents of Atmospheric Circulation." Phil. Trans., A, Vol. 183.
- Harold B. Dixon.
"The Rate of Explosion in Gases." Phil. Trans., A, Vol. 184.

1894. Thomas Edward Thorpe and J. W. Rodger.
"On the Relations between the Viscosity (internal friction) of Liquids and their Chemical Nature."
Phil. Trans., A, Vol. 185.
1895. A. G. Vernon Harcourt and William Esson.
"On the Laws of Connexion between the Conditions of a Chemical Change and its Amount. III. Further Researches on the Reaction of Hydrogen Dioxide and Hydrogen Iodide."
Phil. Trans., A, 1895.
1896. William Chandler Roberts-Austen.
"On the Diffusion of Metals."
Phil. Trans., A, 1896.
1897. Osborne Reynolds and W. H. Moorby.
"On the Mechanical Equivalent of Heat."
Phil. Trans., A, Vol. 190.
1898. William James Russell.
"Further Experiments on the Action exerted by certain Metals and other Bodies on a Photographic Plate."
Proceedings, Vol. 63.
1899. James Alfred Ewing and W. Rosenhain.
"The Crystalline Structure of Metals."
Phil. Trans., A, Vol. 193.
1900. William Augustus Tilden.
"On the Specific Heat of Metals and the Relation of Specific Heat to Atomic Weight."
Phil. Trans., A, Vol. 194.
1901. James Dewar.
"The Nadir of Temperature and Allied Problems."
Proceedings, Vol. 68.
1902. Lord Rayleigh.
"On the Law of the Pressure of Gases between 75 and 150 Millimetres of Mercury."
Phil. Trans., A, Vol. 198.
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AWARD OF MEDALS, 1902.

The Copley Medal to Lord Lister, in recognition of the value of his Physiological and Pathological researches in regard to their influence on the modern practice of Surgery.

The Rumford Medal to the Hon. Charles Algernon Parsons, for his success in the application of the steam turbine to industrial purposes, and for its recent extension to Navigation.

A Royal Medal to Prof. Horace Lamb, for his investigations in Mathematical Physics.

A Royal Medal to Prof. Edward Albert Schäfer, for his researches into the functions and minute structure of the Central Nervous System, especially with regard to the motor and sensory functions of the Cortex of the Brain.

The Davy Medal to Prof. Svante August Arrhenius, for the application of the theory of dissociation to the Explanation of Chemical Change.

The Darwin Medal to Mr. Francis Galton, for his numerous contributions to the exact study of heredity and variation contained in "Hereditary Genius," "Natural Inheritance," and other writings.

The Buchanan Medal to Dr. Sydney A. Monckton Copeman, for his experimental investigations into the Bacteriology and comparative Pathology of Vaccination.

The Hughes Medal to Prof. Joseph John Thomson, for his numerous contributions to Electric Science, especially in reference to the phenomena of Electric Discharge in Gases.

STUDENTSHIPS.

The Joule Studentship is held by Dr. Ulrich Behn, in Berlin, for a research to establish a direct connection between the measurements of Ice Calorimetry and Water Calorimetry.

The Mackinnon Studentship is held by Mr. J. J. R. Macleod, M.B., for researches in Pathological Chemistry.

ANNIVERSARY MEETING.

1902.

On Monday, December 1, the Anniversary Meeting of the Society was held in their apartments in Burlington House.

SIR WM. HUGGINS, K.C.B., O.M., D.C.L., LL.D., President, in the Chair.

The Report of the Auditors was presented as follows:—

“During the past year, the total Ordinary Receipts on General Purposes Account, including the Treasury Grant of £1,000 for Publications, amount to £7,531 5s. 1d.

“The total Ordinary Expenditure for the same period on General Purposes, including grants for Publications, amounts to £7,349 9s. 3d., showing an excess of Income over Expenditure of £181 15s. 10d.

“The Assets of the Society on the General Purposes Account amount to £4,971 7s. 10d., against which there are liabilities amounting to £1,926 16s. 4d., leaving a balance to the credit of the Account of £3,044 11s. 6d.

“The Trust Funds Accounts show a balance of Receipts over Expenditure amounting to £5,312 6s. 10d., of which £2,477 13s. 1d. appears on the General Trust Funds Accounts, and £2,834 13s. 9d. on the Account of the National Physical Laboratory.”

The thanks of the Society were voted to the Treasurer and Auditors.

The Secretary read the lists of Fellows elected and deceased since last Anniversary. (*See pp. 41, 180, and 234.*)

The following Report of the Council, which had been previously distributed to the Fellows, having been taken as read, was, on the motion of the President, received:—

REPORT OF THE COUNCIL.

British Academy.

Since the issue of the last Report of the Council, a "British Academy for the Promotion of Historical, Philosophical, and Philological Studies" has been constituted, and incorporated by Royal Charter. A petition in favour of granting the Charter had been presented by the Council to H.M. Privy Council. The President and Council were then requested by the Privy Council to give their opinion upon a petition which had been presented to the Privy Council praying that the incorporation of the studies above referred to should be "provided for in some relation to the Royal Society." They replied that the Council of the Royal Society most strongly deprecated any change in organisation being imposed upon the Society from without in order that it might include within itself the studies for which the incorporation of the British Academy is asked, being convinced that such a change would destroy the independent position which the Society now enjoys as the head, in this country, of the Mathematical, Experimental, and Natural Sciences. The Privy Council subsequently invited the opinion of the Royal Society upon a memorial suggesting that it would be desirable to attempt to organise officially in one institution the several branches of knowledge. The President and Council replied that they could not consent to the Royal Society forming one department of any institution or academy such as that suggested.

The new Academy has applied for admission to the International Association of Academies as being an Academy representing the United Kingdom in the philosophico-historical branches of learning.

"Privileged" Candidates for Fellowship.

In a previous Report it was stated that further consideration of the Statutes governing the Election of Fellows under privileged conditions had been deferred until after a decision had been arrived at concerning the establishment of a British Academy. That question having passed out of the hands of the Royal Society, the Council again consulted the Committee to which the matter was originally referred. The Committee re-affirmed their former decisions, and upon their recommendation the Statutes relating to this subject have been

amended. The principal amendment provides that the Council may, once in every two years, recommend to the Society, for election as Fellows, not more than two persons who, in their opinion, have either rendered conspicuous service to the cause of Science, or are such that their election would be of signal benefit to the Society.

The following is the new Statute, the second paragraph of Statute IV, in the present edition, being repealed :—

“In cases in which the Council is of opinion that, in the interests of the advancement of Natural Knowledge, it is desirable that persons be elected Fellows of the Society otherwise than as provided by Statutes III to XII of this Chapter, they may, once in every two years, recommend to the Society for election not more than two persons, who, in their opinion, either have rendered conspicuous service to the cause of science, or are such that their election would be of signal benefit to the Society. The persons so recommended shall be selected by the Council by ballot, in accordance with the procedure established by Standing Orders of Council. Provided always that no person shall be so recommended unless he obtain four-fifths of the votes of the Members present.

“At the Ordinary Meeting of the Society next following the Meeting of Council at which such selection is made, the person or persons nominated shall be proposed for election by means of a certificate prepared in accordance with Statute III of this Chapter, no distinction, however, being made between personal and general knowledge, and the ground on which the candidate has been nominated by the Council, that is to say, whether as having rendered conspicuous service to the cause of science, or as such that his election would be of signal benefit to the Society, being alone stated as the qualification. Such certificate, on being allowed by the Society, shall be suspended in some convenient place in the apartments of the Society until the day on which a ballot is taken upon it. The date for the ballot, which shall not be earlier than the third Ordinary Meeting after that at which the certificate is read, shall be announced at the head of the certificate.”

Women Candidates for Fellowship.

A certificate in favour of a married lady as a candidate for the fellowship of the Society having been received, the President and Council, before registering or reading the certificate, decided to take Counsel's opinion as to their powers under the Charters with respect to the candidature of women. Acting upon the advice of Counsel, the President and Council decided that the certificate in question should not be registered or read.

A copy of the case submitted to Counsel, together with the opinion thereon, has been sent to all the Fellows

Malaria.

The researches in India referred to in the Council's last Report have been continued, and two series of Reports to the Malaria Committee have been published.

One of the most important pieces of work which engaged the attention of the Observers was the demonstration of the reduction of Malaria in a highly malarious Cantonment (Mian Mir) by practical measures. The result of these measures cannot be gauged until the completion of the fever season, and unfortunately both Dr. Christophers and Dr. Stephens have been obliged to return to England before the completion of the experiment; but the Indian Government, which has taken the greatest interest in this practical work, and has afforded all possible assistance, has directed Capt. S. P. James, I.M.S., who had previously assisted the Observers, to continue the investigation. The Society is much indebted to the Indian Government and to Capt. James for their valuable assistance.

Sleeping Sickness.

An outbreak in Uganda of the disease, known as "Sleeping Sickness," having been brought to the notice of the Society, a deputation waited upon Lord Lansdowne in April last to ascertain whether H.M. Foreign Office was prepared to consider favourably a recommendation from the President and Council that a small Commission should be despatched to Uganda to investigate the disease. The Secretary of State having expressed his approval of the scheme, a Commission, consisting of Dr. G. C. Low, Dr. C. Christy, and Dr. A. Castellani, was appointed on the recommendation of the Malaria Committee, and despatched to Uganda in June. H.M. Treasury has agreed that part of the expenses shall be defrayed from the Uganda Protectorate Funds, and the Government Grant Committee has voted a sum of £600 towards the expenses of the investigation. H.M. Government continues to take an active interest in the subject, and results of much importance are anticipated. The Commission is working under the direction of the Malaria Committee.

Volcanoes.

On May 17 a letter was received from Mr. Chamberlain, asking if the Royal Society would undertake the investigation of the recent volcanic phenomena in the West Indies, and stating that should an expedition be sent there the Colonial Office would, otherwise than by

a money grant, be glad to give every support. The Council undertook the investigation; and Dr. Tempest Anderson, F.G.S., who travelled at his own expense, and Dr. J. S. Flett, of the Geological Survey, whose services were lent by the Board of Education, were appointed to visit the scene of the eruptions, and left England for St. Vincent on May 28, eleven days after the receipt of Mr. Chamberlain's letter.

In all six weeks were spent in the islands, including Martinique, where facilities were afforded by the French Government officials, and results of great interest have been obtained; a preliminary account of the Expedition has already appeared in the "Proceedings" (vol. lxx), and a full report is now in preparation. The Observers met with the greatest kindness throughout the Expedition, and the Society is much indebted to Sir Robert Llewellyn, Governor of the Windward Islands, and other local officials connected with the Colonial Office, for the valuable help which they rendered to the Observers.

The expenses in connection with the Expedition have been met by a grant of £300 from the Government Grant Committee.

National Physical Laboratory.

Bushy House was formally opened as the National Physical Laboratory on March 19, 1902, by H.R.H. the Prince of Wales. The Prince was able to announce that the firm of Sir W. Armstrong, Whitworth & Co. had made a donation of £1,000 to the funds of the Laboratory. This was followed in a few days by an anonymous gift of £1,000 from another donor, while more recently the Institution of Civil Engineers have voted £500 a year, and the Iron and Steel Institute £200 a year each for five years to the Laboratory funds. An effort is now being made to raise a considerable endowment by subscription from Engineers interested in the Laboratory and its work. The Prince also referred with approbation to a proposal to establish at the Laboratory an experimental tank for the testing of ships' models. This proposal has been taken up by the Council of the Institution of Naval Architects, who are endeavouring to raise the funds required to build and equip the tank. Since the date of the opening the Director, with the Superintendent of the Engineering Department and eight assistants, besides fitters and instrument makers, has been employed in organising the Laboratory. Much has been done in this way, and a number of experiments are now in progress, details of which will be found in the Report of the Executive Committee. Test work is beginning to come in, though until the National Physical Laboratory is more widely known, progress in this

direction must be slow. A series of pamphlets giving particulars of the test work that can now be undertaken and the fees charged for it, has been issued.

The Executive Committee have again to thank various donors for valuable gifts. The Drapers' Company are providing a Lorenz apparatus for the determination of electrical resistance in absolute measure in memory of the late Principal Viriamu Jones, F.R.S.; Lady Galton has given a standard clock in memory of her husband, the late Sir Douglas Galton, F.R.S.; and Dr. Common, Mr. Beilby, Prof. McLeod and Messrs. Siemens Bros. are presenting special apparatus. The great need at present is a larger income to enable the Committee to increase the staff and cope with the demands made on them for special kinds of work.

Further inquiries have been made during the year by the Executive Committee of the National Physical Laboratory as to a site free from electric disturbance for the new Magnetic Observatory, to which the more delicate observations will be transferred from Kew, and negotiations are now in progress. The Council hope soon to have definite information on this subject.

International Catalogue of Scientific Literature.

The work of publishing the International Catalogue of Scientific Literature has begun. Volumes dealing with Botany and Chemistry appeared in May, and the remaining volumes of the first annual issue are now being published. In the first year's issue the volumes of Botany, Chemistry, Physics, and Physiology are divided into two parts, so that the seventeen sciences are dealt with in twenty-one volumes, or parts of volumes. A volume containing a list of scientific periodicals published in all parts of the world will be issued, and subscribers for a complete set of the Catalogue will be entitled to receive this volume gratis.

Bearing in mind the extreme difficulty of the task undertaken, the progress made is most satisfactory, and indeed such that the ultimate success of the enterprise may be confidently looked to. With one exception, every country which is systematically prosecuting scientific research has completed the organisation of a special office, no fewer than thirty *Regional Bureaus* being now engaged in preparing the material for the Catalogue. The Society may well feel satisfied that a work which it has initiated has been taken up with such remarkable accord by the scientific world; and it is to be hoped that the Catalogue will at once meet with the public support which it must receive if it is to be carried on with the greatest advantage to scientific workers. The Executive Committee of the Catalogue already find, as

was foreseen would be the case, that the plan of carrying out the whole of the indexing by the Regional Bureaus entails difficulties and delays; they are convinced that for the speedy and adequate publication of the Catalogue, the co-operation of authors and publishing bodies must be secured, so that every paper may be indexed at the time of its publication. The Royal Society has found no difficulty in producing such an index. Several other British Societies adopt the plan, and a subject-index accompanies many American publications. It is most desirable that this practice may soon become general, so as to avoid the difficulties and imperfections that otherwise occur in indexing the contents of scientific publications in accordance with the official scheme.

In October of this year the number of complete sets of the Catalogue (or their equivalent in parts of sets) subscribed for had risen to 382½, an increase of 46½ during the previous twelvemonth. The Royal Society has made itself responsible for 45 of these sets being subscribed for in the British Islands, and the subscriptions from foreign countries and the Colonies are as follows:—Canada, 7 sets; Cape Colony, 5; Denmark, 6; Egypt, 1; France, 44; Finland, 2½; Germany, 47; Greece, 2; Hungary, 4; Holland, 6½; India and Ceylon, 35; Italy, 27; Japan, 15; Mexico, 5; New South Wales, 7; Nova Scotia, 1; Norway, 5; Portugal, 1; Queensland, 2; Russia, 25; South Australia, 2; Sweden, 6½; Switzerland, 7; United States, 72; Victoria, 1; and Western Australia, 1.

The total number of slips received from the 30 Regional Bureaus now engaged in the work amounted in October to 133,750. About half these slips related to four sciences—Chemistry, Botany, Zoology, and Physiology. Of the remaining sciences, Physics and Bacteriology come next as regards the number of Catalogue entries.

Royal Society's Catalogue of Scientific Papers.

The Council received with profound regret the intelligence of the sudden death, in May last, of Mr. George Griffith, who had rendered most valuable assistance as Editor of the Supplementary Volume of this Catalogue. Their regret was, they feel sure, shared by the many Fellows of the Society who were acquainted with Mr. Griffith, and appreciated his remarkable erudition and his amiable character.

The Supplementary Volume referred to as near completion in the last Report has now been published, in a volume of 807 pages, forming a Supplement to Volumes I–XI of the Authors' Catalogue for the period 1800–1883. The question of dealing with the remaining 17 years of the century has formed a subject of anxious consideration by the Council, in view of the heavy strain which this undertaking imposes

on the finances of the Society; the Council, however, came to the conclusion that it would be a reproach to the Society that a gap of 17 years should be allowed to exist in the cataloguing of scientific papers. The task of continuing that work from the beginning of the new century having been undertaken by the International Organisation already referred to, the Council determined that the publication of the Royal Society's Catalogue should be continued up to the end of 1900; and the work of preparing the material for the Catalogue is progressing under Prof. McLeod's direction, on the plan recommended by the Catalogue Committee.

The Council still have before them the uncompleted task of preparing the Subject Index to the published volumes of the Catalogue, as well as to the new volumes just referred to. It has been decided that there shall be a single Subject Index for the literature of the whole century, and that it shall be a classified index, with separate volumes for the different sciences.

The problem of meeting the expenses of all the undertakings mentioned is a serious one, difficult of solution. The total sum expended by the Society upon the Catalogue down to the end of June last has been £14,790 5s. 5d. Towards this expenditure a donation of £2,000 was made by Dr. Ludwig Mond in 1892. Sums amounting to £524 11s. 9d. have been received as the proceeds of sales of the volumes handed over to the Royal Society by H.M. Stationery Office, and £1,000 was received from the Treasury in 1879. The Council has also hitherto devoted the income of the Handiey Fund (which they have power to apply as they may deem best for the advancement of science) towards defraying the cost of producing the Catalogue; the total sum received from this source has been £2,394 11s. 10d. A sum of £341 11s., arising from money invested until actually required, has also been available for the same purpose. These pecuniary aids amount in all to £6,260 14s. 7d. As will be seen, they have not been nearly sufficient to meet the whole cost, and the Society has been compelled to make up the balance of £8,529 10s. 10d. out of its own general income.

To continue this tax upon the Society's income would very seriously hamper its activity in other directions for a number of years to come. Substantial aid towards removing this difficulty has been rendered to the Society by the generosity of Dr. Ludwig Mond, who has been so impressed with the importance of the Catalogue, with the necessity for producing the Subject Index of the Scientific Literature of the past century so far as possible in the same complete form as that adopted by the International Council for the literature of the present century, and with the justice of the view that the Royal Society ought for the future to be relieved of the cost of producing the Catalogue,

that he has most generously added to his previous gift of £2,000 the munificent donation of £6,000, payable in four annual instalments of £1,500.

Supplementing this gift has come a generous donation of £1,000 from Mr. Carnegie, to be applied to the same purpose; and the Council cannot but feel confident that the balance of £5,000, making a total of £12,000, which it is estimated will be the cost of preparing and completing the Catalogue and Index, will be supplied by contributions from those interested in the production of a work with which the name of the Royal Society will always be associated, and which has been described by the late Prof. Tait as "the magnificent Royal Society Catalogue of Scientific Papers, one of the greatest boons ever conferred on men of Science."

Indian Observatories.

During the year the Observatories Committee has devoted much careful consideration, at the request of the Government of India, to the subject of the organisation of the Indian Observatories and of the Meteorological Service of India, and reports have been made on the matters that have been thus referred for the advice of the Royal Society.

International Association of Academies.

At the beginning of this year the Royal Society became the Directing Academy of the Association, and as such has been engaged in carrying on the business of the Association. An Executive Committee, with Sir Michael Foster as Chairman, has been appointed to carry out the duties of the Directing Academy, with power to appoint Sub-Committees.

The International Association was instituted for the purpose of dealing with scientific undertakings of an International character, and more particularly for examining proposals for International scientific undertakings, in order to decide whether they are desirable and practical; and, when they need State assistance, to prepare, from a scientific point of view, schemes for such undertakings before the machinery of State action is put in motion. The President and Council have accordingly felt it their duty to consult the Association on proposals for International scientific co-operation brought before them, and this has been done in the case of two proposals from the

German Government, referred to the Council by H.M. Foreign Office : one, that H.M. Government should join in the institution of an International Enquiry into earthquakes, and the other, that this country should join an International Committee for Scientific Aeronautics.

Mackinnon Studentship.

On the recommendation of the Mackinnon Bequest Committee, the Mackinnon Studentship has been renewed to Mr. J. J. R. Macleod for the ensuing year to aid him in continuing his researches in Pathological Chemistry.

The fund which the Society administers under the terms of this bequest has now been augmented by the lapse of one of the annuities which formed a charge upon the estate bequeathed in trust to the Society, and a sum of £5,991 London and North Western Railway Debenture Stock has accordingly been transferred by the executors of the estate to the Society. The Council have under consideration the best method of applying this augmentation of the fund.

Government Grant for Scientific Investigations.

Under the regulations for the administration of the Government Grant the Council has, upon the recommendation of the Government Grant Committee, made grants amounting to £3,486 6s. 8d. from the General Fund, and £900 from the Reserve Fund. These amounts include £333 6s. 8d., the third and final instalment of the grant of £1,000 to the Joint Antarctic Committee, and grants of £600 and £300 towards the expenses of investigations into "Sleeping Sickness" in Uganda, and the recent volcanic phenomena in the West Indies respectively.

A sum of £500 has, in accordance with the regulations, been placed at the disposal of the President and Council of the Royal Society to meet any pressing demands upon the funds which may be made before the next Annual Meeting of the Government Grant Committee.

Publication Grant.

Out of the grant of £1,000 annually placed in the Society's hands by His Majesty's Government "to assist not merely their own publications, but also the adequate publication of scientific matter through other channels and in other ways," the sum of £501 13s. 4d. has been voted out of the grant for this year to societies and agencies other than the Royal Society. Of the total sum of £7,000 received by

the Society in respect of this grant since its initiation, the sum of £3.204 15s. has been so applied.

Publications.

During the past year 23 papers have been published in the Mathematical and Physical section, and 10 in the Biological section of the "Philosophical Transactions." The two sections together contain in all 1,553 pages of letterpress and 27 plates. Seventeen numbers of the "Proceedings" have been issued, containing 1,026 pages and 20 plates.

In all, 124 papers were received between the close of the Session in June, 1901, and the corresponding date in 1902. Of these, 34 were submitted for publication in the "Philosophical Transactions," and 88 for the "Proceedings"; and 17 and 81 have been ordered for publication in the two categories respectively; 5 have been ordered for publication as separate Reports.

Library.

During the past year 5 new serial publications have been added to the 480 which the Society already received regularly by exchange or purchase. Besides these, 70 books have been added to the Library by presentation or purchase. Among the additions may be specially mentioned :—

Suppl. I to "Index Kewensis"; Lord Rayleigh, "Scientific Papers," vol. 3; Theobald "Monograph of the Culicidæ"; Huxley, "Scientific Memoirs," vol. 4; "Encyclopædia Britannica," supplement to 9th edition, vols. 25–29; Beltrami, "Opere Matematiche," vol. 1; and "The Scientific Writings of G. F. FitzGerald."

Miscellaneous.

The Council have had pleasure in accepting a very faithful and valuable portrait by G. F. Watts of the late Mr. Thomas Graham, F.R.S., presented to the Society by his niece, Mrs. J. C. Inglis.

At the commemoration in October of the Three-Hundredth Anniversary of the opening of the Bodleian Library at Oxford, the Society was represented by the Senior Secretary, who presented an address from the Council. The Society was also represented by several Fellows at the Centenary Commemoration of Niels Henrik Abel at Christiania, and by Sir George Stokes at the Jubilee of the Owens College, Manchester.

The Council have had under consideration the desirability of improving the arrangements for the management of the business of the Society, which has, both on the scientific and the administrative side, so largely increased during recent years, that the arrangements which have for so many years obtained are no longer adequate to the effective conduct of business.

Acting upon the recommendations of a Committee specially appointed to consider the matter, the Council have decided to make the Assistant Secretary (under the supervision of the principal Officers) more formally responsible than has hitherto been the case for the execution of the business of the Society; and in order that he may be more directly acquainted with the details of business and with the policy of the Council, have determined that he shall, except on the occasions of the nomination of Candidates for Fellowship, the adjudication of Medals, the nomination of new Members of Council and Officers, and on such other special occasions as the President shall determine, be present at the Meetings of Council to take the Minutes. This decision renders it desirable to modify certain Statutes and to provide new Standing Orders, and the Council propose to take this in hand.

THE PRESIDENT'S ADDRESS.

Since the last Anniversary the Society has lost by death nine Fellows and two Foreign Members.

The deceased Fellows are :—

Sir Joseph Gilbert, died December 23, 1901, aged 84.

The Marquis of Dufferin and Ava, died February 12, aged 75.

Maxwell Simpson, died February 25, aged 86.

Sir Richard Temple, Bart., died March 15, aged 76.

George F. Wilson, died March 28, aged 80.

Sir Frederick A. Abel, Bart., died September 6, aged 75.

Dr. John Hall Gladstone, died October 6, aged 75.

William Henry Barlow, died November 12, aged 90.

William C. Roberts-Austen, K.C.B., died November 22, aged 59.

The Foreign Members are :—

Alfred Cornu, died April 12, aged 61.

Rudolf Virchow, died September 5, aged 80.

Biographical records of these Fellows and Foreign Members will appear in due course in the Obituary Notices, but of some of them a brief notice is called for on this occasion.

Not the Royal Society only, but mankind sustains grievous loss by the deaths of two of our Foreign Members, one as rich in years as in laurels, the other, though he had already leaves upon his brow, was in full vigour of life and in the van of scientific progress : Rudolf Virchow and Alfred Cornu.

In Rudolf Virchow, science mourns one of the greatest of her disciples, Germany one of the most famous of her men of science. A great master of science, Virchow leaves a record of intellectual achievement unsurpassed in its high distinction and value, its exceptional and sustained vigour during a life unusually prolonged, and its remarkable variety. He was pre-eminently one of the very few men who can do many things equally well. In his own country, Virchow will be remembered not only as the distinguished pioneer in pathological science, but also as an influential politician and a great social and municipal reformer.

His public duties in the Prussian Chamber, in the Reichstag, and in the Council Chamber of Berlin did not take from his devotion to his work as Professor of Pathology in the University of Berlin, to which he was appointed soon after the publication of his epoch making work on Cellular Pathology in 1856.

Founded on the notable researches of Schwann and Müller, by showing that the cell is the living unit in morbid as well as in healthy conditions, Virchow laid the foundation of a rational treatment of disease, and so established the main principle on which all subsequent pathological study rests.

He founded, in collaboration with Reinhardt, and conducted through half a century, the celebrated "*Archiv für Pathologische Anatomie und Physiologie*," which bears his name.

Virchow had been many times in England. He was present at the Medical Congress held in London in 1881. In the Croonian Lecture, delivered before this Society in 1893, he reviewed, in his own masterly way, the progress of pathological physiology. Five years later he gave the Huxley Lecture at the Charing Cross Medical School, when he took for his subject "*Recent Advances in Physiology*"; Lord Lister and Sir James Paget being present to do him honour. At the celebration of his 80th birthday at Berlin, in 1901, the Royal Society was represented by Lord Lister.

Virchow was born in 1821. He was elected a Foreign Member of the Royal Society in 1884; eight years later the Royal Society conferred upon him their highest honour, awarding him the Copley Medal. His death, hastened by a serious fall which took place in January last, occurred on September 5, in the 81st year of his age.

France loses in Alfred Cornu one of the most distinguished of her men of science. Possessed of rare perspicacity of intellect and of resourcefulness in experiment, by his numerous researches, especially in the domain of optics, he has won no mean place as an original contributor to science. Not less remarkable for lucidity of thought, simple directness of method, and singular elegance of language, was his power of setting forth, alike in the lecture room and before a public audience, the results of his investigations. He was well known and highly appreciated in this country. More than once he gave a Friday Evening Discourse at the Royal Institution; and on the occasion of the Jubilee celebration of Sir George Stokes, he delivered at Cambridge the Rede Lecture, distinguished by his usual graceful lucidity of thought and language, on the wave theory of light and its influence on modern physics. On his part, Madame Cornu informs me, in a private letter received since his death, that he especially appreciated and reciprocated the friendship and sympathy of his English colleagues.

After a brilliant career at the École Polytechnique and at the École des Mines he was, at the early age of 26, chosen Professor of Physics at the École Polytechnique, a position which he retained with much distinction to the end of his life.

Soon afterwards he entered upon his classical determination of the velocity of propagation of light, which gained him, among other honours, the membership of the Académie des Sciences and the Rumford Medal of our Society in 1878.

Stellar photographs taken by me about 1874 having revealed for the first time the more complete spectrum of hydrogen, Cornu undertook an investigation on terrestrial hydrogen in his laboratory, and was rewarded in 1886 in obtaining upon his plates for the first time the full series of lines which had been photographed in the spectra of the stars.

Cornu worked also with great success on the linear and general absorption of our atmosphere on the solar spectrum. An account of his scientific work, which extends over several departments of physical science, will be found in due course in the Obituary Notices. Cornu was born in 1841; he was elected a Foreign Member of this Society in 1884; he received the honorary degree of Doctor of Science from the University of Cambridge in 1899; and died, in the spring of this year, mourned and deeply regretted by the whole scientific world.

It is with deep regret that I have to record the loss which the Society has sustained by the decease of a Fellow very widely known and respected. Sir Frederick Abel held for many years a conspicuous position in the world of science, and in public life, in connection with technical education and the Imperial Institute.

His official life began when in 1851 he was appointed to succeed Faraday as Professor of Chemistry at the R.M.A. at Woolwich; seven years later he became Chemist to the War Office, a post which he held for 34 years. His official duties naturally led him to devote his attention to the study of explosives, so that his name is intimately associated with the important developments in the manufacture and use of ammunition which distinguish the latter part of the last century. In particular, he devised and practically introduced such improvements in the preparation of gun-cotton as to enable it to be safely manipulated and successfully applied to practical uses. He was a Member of the Commission on Accidents in Mines, and in 1888 was appointed Chairman of the Government Committee on Explosives, when, in conjunction with Professor Dewar, he introduced a substance containing both gun-cotton and nitro-glycerine, which became the standard explosive of this country.

An important work of his life was the leading part which Abel took

in the foundation of the Imperial Institute. At its opening he was appointed organizing Secretary and Director, a position which he held, latterly in an honorary capacity, to the end of his life, and practically to the end of the existence of the Imperial Institute as a separate institution. His services were recognized by a baronetcy, by K.C.B., and by the G.C.V.O. In 1887 he was awarded a Royal Medal by the Council.

He was a man endowed with very great energy and power of work, and was pre-eminent for his good judgment and strong practical sense. It may not be so generally known that he was a musician of no mean powers, being endowed with exceptional musical feeling and memory. He passed away in September last at the age of 75.

We record with sorrow the death of another distinguished Fellow, who has done good work for science and for his country, Sir Henry Gilbert, the fellow-worker with the late Sir John Bennet Lawes in the famous agricultural experiments carried on for a long series of years by them at Rothamsted.

At the Jubilee of the Harpenden experiments a silver salver was presented to him, by public subscription, "in commemoration of the completion of 50 years of unremitting labour in the cause of agricultural science." In an Address, on the same occasion, from the Royal Agricultural Society, it was said, "Your investigations into the application of chemistry to the cultivation of crops and the feeding of live stock have been of the highest possible importance to the practical agriculturist." Shortly afterwards he received a further public acknowledgment for his services to the nation by having conferred upon him by Queen Victoria the honour of knighthood. He passed away last December in the 84th year of his age, having worthily maintained, by his unremitting scientific labours for the good of mankind, the honour of the Fellowship of this Society, to which he was elected in 1860.

These rooms will know no more a Fellow whose presence for one year less than half a century has been frequent at the meetings of the Society, and whose beauty of character and kindness of heart endeared him to all who knew him.

Dr. Gladstone's work was remarkable for its varied nature, and he was among the first to labour in the borderland between chemistry and physics. Early in his career he made very suggestive observations on the solar spectrum, showing that certain of its lines are due to the earth's atmosphere. Especially worthy of mention are his optical researches on the atomic refractions and dispersions of the elements, and his determinations of the optical constants of a large number of bodies. For his suggestive and original work generally, he was

awarded the Davy Medal in 1897. He was the first President of the Physical Society, and later President of the Chemical Society, and he served on two Royal Commissions.

Dr. Gladstone rendered good service to his country and to science by his unwearied labours for 21 years as a Member of the London School Board, using all his influence to bring in a wider training of the children's minds by the introduction of scientific methods into elementary education. Faithful through a long life to the high ideals he had set before him, he did not a little to promote the advancement of science and the welfare of humanity. Dr. Gladstone died in October last in the 76th year of his age.

In common with our fellow-subjects throughout the Empire, but with our loyal sentiments heightened and made more personal and intimate by the closer relationship in which our Sovereign stands to us, as a late Fellow and now our Patron, we were prepared to enter with the fullest sympathy of joy into the great jubilant occasion of the solemn coronation and instalment of H.M. King Edward the Seventh on the throne of his ancestors. Profound indeed, then, was our grief and alarm at the news of the sudden severe illness which had seized His Majesty at so inauspicious a moment. As the Council would not meet for some little time, I conceived it to be my duty to send to Lord Knollys, in your name, a telegram of condolence and of prayer for His Majesty's speedy recovery. I received a gracious reply of thanks from Lord Knollys on His Majesty's behalf.

A few weeks later, when, to the nation's relief and great joy, the King's complete recovery seemed to be assured, I was authorized by the Council to offer, through Lord Knollys, the expression of our deep thankfulness at His Majesty's convalescence, and our earnest prayer for his complete recovery.

The solemnity of the coronation and enthronement of Their Majesties King Edward and Queen Alexandra took place in Westminster Abbey on August 9, on which occasion the Royal Society was duly represented. This seems to me a fitting place to record anew the expression of our loyal homage, and of our earnest prayer, that His Majesty may long reign over a prosperous and united people, a true Prince of Peace, and the Patron and Defender of Science and Progress.

H.R.H. the Prince of Wales, who was elected a Fellow eight years ago, in 1893, was pleased to attend the Ordinary Meeting of the Society on February 6, for the purpose of being formally admitted into the Society. H.R.H. was introduced by our distinguished Fellow, the Marquis of Salisbury, then Prime Minister, and, after having subscribed the Obligation in the Charter Book, was formally admitted

by me in accordance with the Statutes. Afterwards the Prince remained during the reading of a paper by Sir William Crookes.

On leaving, H.R.H. addressed a few words to the Fellows present, and was pleased to say :—"I am, indeed, proud that my name should be added to those on your illustrious roll, which has been inscribed by nearly every Sovereign since the reign of Charles II and by all of the most distinguished men of science since those days. I can assure you of my hearty sympathy with that scientific study and research which now, more than ever, has become so important and essential in our national life."

I need not say that it is a source of a high and proper gratification to us, altogether free from what might appear as possibly ignoble in a formal patronage from without, that we have the privilege of numbering among our Fellows, as part of the Society itself, not only our illustrious Sovereign upon the throne, but also the Prince of Wales. We can not but rejoice that those who occupy the most exalted stations in our land, personally appreciate and enter into the objects and work of the Society, and are pleased to give us the encouragement and the advantage of the influences associated with their high positions, by themselves becoming Fellows with us, by the ordinary methods of election and admission.

We bid a hearty welcome to the new Society which has recently received a Royal Charter for the organization and promotion of those branches of learning which, in foreign academies, are usually included in the Philosophico-Historical section.

This new body, under its adopted title of "The British Academy for the Promotion of Historical, Philosophical, and Philological Studies," will, we sincerely trust, take a worthy place by the side of the older and very distinguished institutions, the Royal Society for the Promotion of the Mathematical, Experimental, and Natural Sciences, and the Royal Academy for the Cultivation of the Arts of Painting and Sculpture, in representing the intellectual activities of the kingdom, though, in accordance with the sentiments and habits of the national character, each Society retains its complete independence, and is in no way subservient to the State.

The present Council having reaffirmed the view taken by the Council of last year, that it would not be desirable to attempt to include the studies undertaken by the newly-formed body as an integral part of the work of the Royal Society, we may rejoice that they will now be cared for by an independent society.

Though it is true that the words of the Charter granted by Charles II. are wide enough legally to include historical and philosophical studies, yet, as a matter of fact, with some few exceptions in early

days, the work of the Royal Society has been confined for two centuries and a-half to the studies with which it is now occupied. Authentic records of its foundation and early work show that the Society was from the first devoted to the promotion of experimental philosophy. This view is supported by the character of the Committees appointed in the first year of its second Charter to assist in the work of the Society, and confirmed by the words of the Royal Warrant of 1665, ordering the making of a mace, in which the Society is defined as established "for improving natural knowledge by experiment."

It will be our pleasant duty as the Acting Academy of the International Association of Academies to recommend the new Society for admission into the "Association of Academies" as the body representing Philosophico-Historical science in the United Kingdom.

It is with much satisfaction that I can announce that the Royal Geographical Society have been successful, through the untiring energy of their President, in sending out a second ship, as from the first was seen to be desirable, fully equipped with scientific instruments, and furnished with ample stores, to the assistance, and relief, if necessary, of the National Antarctic Expedition. The "*Morning*" sailed from our shores in July last, and will leave New Zealand in December for the Antarctic regions in search of the "*Discovery*," to which it will not only act as a tender, but, if all goes well, be able, by observations of its own, to supplement the work of Captain Scott.

We may now look forward, without undue anxiety, to receive in the spring of next year information as to the experiences of the Antarctic Expedition, and the scientific results which it has been able to obtain.

As the living representatives of the great men who founded the Royal Society or made it what it is, it behoves us to be very eager as to whatever concerns not only the direct improving of natural knowledge, but also the spread of that knowledge and its influence upon the life and industry of the nation. If we contrast the culture and civilisation of the great nations of antiquity, great as they were, with the altogether fuller life of to-day, we cannot fail to recognise how completely the untold conveniences, comforts, activities possible in so many new and varied directions, the wide dissemination by means of scientific processes of forms of beauty, and the power over disease of the present time, which have not only increased the average span of life, but to a much greater extent made so much more possible to man within his short span of years, have followed directly from the great improvement which has been brought about, especially during the last century, and largely by the work of the Royal Society, in our knowledge of natural processes and of the laws which govern them.

An event, therefore, so closely associated with the direct object for which the Royal Society exists, and of so great significance and promise for a fuller recognition in the future by the Government, of the importance of scientific methods and of research to our industrial prosperity, as the establishment of a National Physical Laboratory, the opening of which has taken place since our last Anniversary, should, it seems to me, receive on this occasion more than a passing and mere formal notice, especially so since the ultimate control of the Institution is vested in the Council of our Society.

The supreme value of research in pure science for the success and progress of the national industries of a country can no longer be regarded as a question open to debate, since this principle has not only been accepted in theory, but put in practice on a large scale, at a great original cost, in a neighbouring country, with the most complete success.

The Physikalisch-technische Reichsanstalt of Berlin, largely due to the scientific foresight of von Helmholtz, was instituted in recognition of the principle that all the industrial applications of science rest on the foundation of pure scientific discovery. The Institute has for its main objects (1) The conduct of pure physical research, especially in such directions as are suggested by industrial questions; (2) The construction and supply of electrical and physical standards; (3) The verification of instruments of precision for scientific and technical purposes.

The original cost of the Institute was over £200,000, and its yearly maintenance is not less than £17,000. During the five years that it has been at work, its influence upon the science and the manufacturing interests of Germany has been most remarkable. Besides the publication of numerous memoirs of original research and of papers on technical processes, the direct results of the work of the Institute upon the industries of the country have more than justified the prevision of the founders; largely, we regret to say, to our own national loss, and to the almost complete passing to that country of the renown which was formerly ours in exact scientific measurements, and for the construction of standards and instruments of precision. So true is it, that the investment of public money in scientific research can only be compared to good seed cast into good ground, bringing forth in results a hundred, or even a thousandfold.

Besides these more direct results, the existence of such a national Institution for physical and technical purposes cannot fail to arouse and foster the public appreciation of those scientific methods which, in education and in commerce, as well as in the industries, are the all in all of a nation's prosperity.

It is therefore, with feelings of high satisfaction, shared, I am sure, by all the Fellows, that I have to record the opening in March last of a similar national Institution in this country. As was fitting to a public occasion so full of possibilities for the future wealth and power of the country, the ceremony of inauguration was performed by our Fellow, H.R.H. the Prince of Wales, who was accompanied by the Princess of Wales.

The Prince's words were weighty, and so appropriate to this unique occasion in his country's history, that I place on record here a few sentences of special pertinence and value. The Prince said :—

"I am glad that my first duty as a Fellow of the Royal Society should be to join with my distinguished brethren in opening this Institution, the direction and administration of which have been entrusted to the Society by the Government. It is also a great pleasure to assist in the inauguration of what may fairly be called a new departure, for I believe that in the National Physical Laboratory we have almost the first instance of the State taking part in scientific research. The object of the scheme is, I understand, to bring scientific knowledge to bear practically upon our every-day industrial and commercial life, to break down the barrier between theory and practice, to effect a union between science and commerce. This afternoon's ceremony is not merely a meeting of the representatives of an ancient and world-renowned scientific Society for the purpose of taking over a new theatre of investigation and research. Is it not more than this? Does it not show in a very practical way that the nation is beginning to recognise that if her commercial supremacy is to be maintained, greater facilities must be given for furthering the application of science to commerce and manufacture? In the profession to which I am proud to belong there are, perhaps, special opportunities of gaining a certain insight into the general trade and commerce of the world, and of comparing the commercial vitality of the different countries. And certainly, abroad, one finds an existing impression, which was confirmed by the experience of my recent and interesting colonial tour, that the superior technical and scientific knowledge of our foreign competitors is one reason why our hitherto pre-eminent position in manufactures and commerce is so considerably threatened. . . . They (the Government) are at present not inclined to spend more money upon equipping the laboratories. It is, therefore, to the liberality of the public that we must look not only for money, but for presents in machinery and necessary appliances."

The sum voted by the Government for the Physical Laboratory, an Institution second to none in its national importance, was the very modest one of £13,000 for the buildings and equipment, and an annual

grant of £4,000 for five years in aid of the expenses of conducting the work of the Institution. It is, therefore, "to the liberality of the public," as the Prince pointed out, "that we must look not only for money, but also for presents of machinery and other appliances." Several donations and gifts of instruments have been received from private individuals and from manufacturing firms, but much more money will be needed if the Laboratory is to be in a position to carry out adequately some only of the chief duties of such a Government Institution; especially the prosecutions of scientific investigations, which require more uninterrupted time and attention on the part of the observers, or better conditions in the way of instruments and appliances than can be furnished in the laboratories of private individuals, or even in those connected with the colleges and teaching institutions of the country. A typical case in point is the great tank which, it is hoped, may be constructed in the grounds at Bushey for the purpose of determining the most suitable form of build of a ship's hull from experiments made on models drawn through the tank.

The practical limits of the application of the known laws of physics are, indeed, far from having yet been reached, and since the unexpected and brilliant discoveries of genius cannot be commanded to order, the more immediate work to be carried out in such a national Institution, is probably an exhaustive study of the conditions of a more perfect adaptation of known physical and chemical laws to manufacturing processes, and to the arts of life. An instructive example may be cited from the work of the German Reichsanstalt. It was from work of this unpretentious order, and not by any direct scientific discovery, that the methods and instruments for the exact measurement of high temperatures were so developed and made available for the use of the workmen, that Germany has recently acquired its supremacy in the manufacture of porcelain.

The supreme necessity in this country of a more systematic application of scientific methods, both in theory and in practice, to our manufactures and industries, which was so wisely insisted upon by the Prince of Wales on the occasion of his admission to the Fellowship of the Society, and again in his address at the Opening of the National Laboratory, has since been confirmed and enforced in a remarkable way by the individual testimonies of thirteen Fellows of this Society, in the evidence which they recently gave, from their own knowledge and experience, either as teachers of science or as leaders and technical advisers in manufactories or commercial undertakings, before a Committee of the London Technical Board.

Their testimony was of no uncertain sound, but showed clearly that the Prince's words of warning, which I have quoted, were not

unneded, and that, indeed, our industries and commerce are not only in danger, but are actually passing into the hands of other countries, where scientific research is more directly cultivated under the fostering care of the State.

It seems to me the time has come when the President, on this occasion speaking on his own responsibility, should not remain silent upon a question of such urgency, and which concerns so closely the object for which this Society exists.

The testimony of these expert witnesses was all but unanimous in showing that one of the most obvious shortcomings affecting our national industries, namely, the relatively small number of suitably trained men possessing the technical knowledge and creative skill needful for the improvement of our chemical, electrical, and engineering industries, must be regarded as a secondary symptom, following upon the smallness of the demand for such men. Further, that this smallness of demand is itself the necessary consequence of a wider and more serious state of things, which is affecting injuriously all our national activities, namely, the absence, speaking generally, of a sufficiently intelligent appreciation on the part of the leaders of the nation, whether as legislators, capitalists, manufacturers, or merchants, of the supreme importance of scientific knowledge and scientific methods, not only for the successful carrying on and improvement of all industrial enterprises, but also, and not less so, for the working out of all national problems whatever, whether of education, of economics, of hygiene, or especially of national defence in the construction of our armaments by sea and by land, and the training of our soldiers and sailors.

Here again we are face to face with a cause which is itself secondary, and dependent upon some wider antecedent state of things. Let us endeavour to get to the root of the matter.

The undoubted present state of apathy of the national mind in relation to the importance of natural knowledge, and its consequent inability to recognise how entirely and without exception, in every undertaking, success must depend upon our so acting in conformity with the laws of Nature, that we have her on our side, as our ally, and not working against us, may arise, conceivably, from either of two causes: from a natural want of enterprise and resourcefulness inherent in the national character, or from a system of education which, relatively to the educational training of other countries, fails to develop and strengthen the qualities of mind which are needed for an adequate appreciation of science.

The former of these two possible causes may surely be dismissed at once. We need only look back in history to see how this small

northern island, by its own innate energy, has come to be supreme over vast regions on all parts of the earth's surface, and is now the head of an empire which engirths the world.

We are, therefore, left, without power of escape, to the second alternative, namely, that it is our system of higher education which is in fault, clearly through being too mediæval in spirit. In accordance with the traditions of the past, our higher national education deals with words rather than with things; it is based too exclusively on the memory of what is known, and too little, if at all, on individual observation and reasoning.

The evidence seems clear, that the present inappreciative attitude of our public men, and of the influential classes of society generally, towards scientific knowledge and methods of thought must be attributed to the too close adherence of our older Universities, and through them, of our public schools, and all other schools in the country downwards, to the traditional methods of teaching of mediæval times. The incubus of the past makes itself felt, especially in the too strict retention of educational methods in which the first importance is given to the reproduction of knowledge from memory, to the acquiring and applying of what is already known; with little, if any, guidance and encouragement to the undergraduate student in the direction of research and of independent reasoning.

With the experience of Germany and the United States before us, the direction in which we should look for a remedy for this state of things would seem to be for both the teacher and the student to be less shackled by the hampering fetters of examinational restrictions, and so for the professor to have greater freedom as to what he shall teach, and the student greater freedom as to what line of study and research he may select as being best suited to his tastes and powers.

We have before us in the United States an example which is worthy of our consideration. With the opening of the Johns Hopkins University in 1876, there began in the States a movement to organise advanced study, and especially research, for those who had already passed through a college course of study. In the words of Professor Butler, of Columbia University, "the combination of collegiate and university instruction under one executive administration is distinctive of higher education in the United States, and its chief source of strength." The candidate for the highest degree, Ph.D., must spend, at least, two years, after obtaining his bachelor degree, in carrying out an investigation in the field of his main object of study, and then submit the dissertation, which embodies the results of his research, preferably in printed form, to the authorities for their approval

and acceptance as a condition of receiving his degree. A similar plan of university study has been pursued in Germany with success.

Into the dry bones of the present academic system of reading and examination must enter the living breath of the spirit of research, that is to say, of the individual efforts of each mind, for itself and in its own way, to seek to extend our knowledge in the direction most suited to its powers, by means of original observation and reasoning, and aided by the imagination—it may be in the field of science, of history and literature, or of art.

One way of bringing about reform in this direction would be to make individual research an indispensable condition of proceeding to degrees higher than the B.A.

It is scarcely necessary to point out that individual training of this kind would arouse and encourage intellectual independence of thought, and especially the power of initiation and of original enterprise; and further, those creative habits of mind and that facility of resource, which become daily more important in face of the complex problems of modern life, and of the severe international industrial competition of to-day.

The recent evidence before the Committee of the Technical Board of Education brought out strongly the little enthusiasm for knowledge, for its own sake, as contrasted with the devotion and interest given to athletic games, which follows from the present system of our schools.

Now the working out of some one subject by the continuous concentration of the mind upon it, which research imposes as a condition of success, necessarily begets and stimulates interest in it. The student soon becomes engrossed in his chosen pursuit. In this way enthusiasm for knowledge, for its own sake, will be awakened, and the student no longer content to go through his work perfunctorily, for the sake of passing his examination. Further, from this entering into it of a new affection, the mind of the student is no longer left empty, as is too frequently the case under the present system, to be taken exclusive possession of by athletics and games, until he comes to look upon them as a chief end in themselves, and not, as they should be regarded, as valuable means of preserving mind and body in that healthy balance, which is most suitable for the severe and continued exercise of the intellectual powers.

Another secondary result, the importance of which can scarcely be over-estimated, in view of the world-wide competition of to-day, which follows from the freer and more individual educational training of the United States and of Germany, is found to be that as a rule the graduate, on leaving the University, naturally transfers the concentration of mind, which has become habitual to him through his

research work, to the profession on which he enters, whatever it may be, whether of teaching or of commerce. He gives to his profession the first place in his life, bringing to bear upon it that whole-hearted devotion and enthusiasm without which, at the present day, mediocre success, at the best, is all that can be looked for.

In sharp contrast to this state of things, in this country, on the other hand, it is well known with what languid inattention and listlessness, not to say scarcely veiled contempt and disgust, only too frequently those who leave the Universities and higher schools regard the work of their profession or their official duties, and to which consequently they give grudgingly the fewest possible hours of soul-less attention. It is not to such men that we can look for successors to the great men who have passed away, or are still living, as in commerce to Rhodes and to Carnegie, or in science to Newton, Faraday, and Darwin.

In addition to the intellectual influence of a training in research upon the students themselves, the official recognition by the Universities of an original investigation of some subject, as a necessary condition of obtaining the higher academical honours, could scarcely fail to bring about in the public mind a more appreciative attitude in regard to the importance of original reasoning and discovery, and so to a better understanding of the meaning to be attached to natural science and to scientific methods.

The first steps in the direction of true reform must be taken, it seems to me, by the Universities in the relaxation, to some extent, of the established methods and subjects of their examinations, for only in this way can the schools of the country, from the higher schools downwards, be set sufficiently free to be able to improve and enlarge their traditional teaching which has been carried down, with but little change, from the middle ages.

This is not the place for a discussion of the extent to which the studies of our higher schools, and secondary education generally, require to be reformed to meet adequately the larger needs of to-day, but it is obvious that the direction in which changes should be made is in that of the development of self-helpfulness and a spirit of free inquiry, as opposed to the traditional teaching of the past.

Above all things, such a practical study of natural phenomena should become an essential part of our national teaching as would draw out and foster that noblest of our faculties, the power of image-forming in the mind, which, in its highest and productive form, does not consist simply of the reproduction of old experiences from the stores of memory, but by new combinations of them—as by a marvellous alchemy—so transmutes them as to lead to the creation of a new

imagery. This creative use of the imagination is not only the fountain of all inspiration in poetry and art, but is also the source of discovery in science, and indeed supplies the initial impulse to all development and progress. It is this creative power of the imagination which has inspired and guided all the great discoverers in science.

It is some satisfaction to know that a new section of the British Association for the Advancement of Science has been formed for the consideration and discussion, in detail, of the reforms which are needed in the educational methods of the country.

It was clearly shown before the Board of Technical Education that the so-called Modern-side teaching introduced into some of our public schools is not, as at present carried on, so successful as a means of educational training as is the traditional course. There was a consensus of opinion that boys from the classical side of our public schools were better trained generally, and so showed a greater aptitude for acquiring and applying new knowledge, even in scientific studies, than those from the Modern side, whose smattering of scientific facts was superficial and of little value.

The explanation may lie in the comparative want of experience in the art and practice of teaching of the masters on the Modern side, together with the necessity of cramming the memory with facts and formulæ from text-books for the purpose of passing examinations. I need scarcely say that a mere verbal knowledge of scientific facts has little value, and is altogether worthless as a means of educational training.

Taking a wide view of the whole question, it seems to be eminently desirable that the culture to be derived from classical and literary studies should, as far as possible, be retained, which would become practicable by the introduction into our schools of a much keener devotion to work, together with such improved methods of teaching languages and mathematics, as would not only increase the educational value of these studies, but also leave ample time for the teaching of science, no longer, as is now the case, as a subordinate subject to be barely tolerated, but as an integral and essential part of all education; it being understood that such teaching of science is to take the form, as far as possible, of the study of the phenomena of Nature by direct observation and experiment.

It is obvious that with a fuller knowledge and appreciation of science on the part of the nation, a complete change of its practical attitude in respect to science and science questions would necessarily follow, for under such conditions public money would be liberally voted by the Government in aid of technical colleges and laboratories, and in response to the larger demand that would arise for them in all

industrial enterprises, competent chemists, electricians, and engineers would be forthcoming in sufficient numbers, and then, as is already the case in the United States, institutions for the teaching and advancement of knowledge would be freely founded, and liberally endowed by means of private benefactions.

In the meanwhile much may be done provisionally by our Fellows, in their individual capacity, by stimulating and directing wisely the increased attention which is now being given to science in all departments of life, and especially in fostering and extending the many Technical Colleges and Institutions which are being established in all parts of the country.

The Fellows will view with no little satisfaction the fact that the King has been pleased to recognise the importance of science being represented on the highest judicial body in the kingdom, by the appointment of two of our Fellows as Privy Councillors. When we consider that at the present time there are few important matters which can arise which do not include questions for the adequate consideration of which scientific knowledge is desirable, we cannot but feel some regret that on the King's Privy Council there has been hitherto no official representation of science as such, but only an incidental representation by the occasional appointment of such distinguished men of science as the Sovereign has delighted to honour.

COPLEY MEDAL.

Lord Lister, F.R.S.

The Copley Medal is awarded to Lord Lister in recognition of the value of his physiological and pathological researches in regard to their influence on the modern practice of surgery.

When in 1880 a Royal Medal was awarded to him, it was acknowledged that his researches had "not only reformed the whole art of Surgery but given a new impulse to Medical Science generally." The experience of another twenty years has written out that judgment in still larger letters. Lister's researches have made the world a wholly different world from what it was before.

The main result of those researches, namely, the definite proof that the suppuration of wounds, no less than putrefaction, was the work of living organisms, was not reached as a happy accident, it was the natural outcome of long-continued scientific observation and reasoning, the fruit of the labours of a well-trained scientific mind. Beginning with purely histological and physiological investigations

having only an indirect relation to medicine and perhaps still less to surgery, he was gradually led, without changing his method or his mode of thought, to that which has so profoundly influenced both. His work has been a shining example of that which the Royal Society was founded to advance, the shaping of a new philosophy which is for the good of man.

RUMFORD MEDAL.

The Hon. Charles Algernon Parsons, F.R.S.

The Rumford Medal is given to the Hon. Charles Algernon Parsons for his success in the application of the steam turbine to industrial purposes, and for its recent extension to navigation.

The work of Mr. Parsons is of a kind which specially comes under the terms and conditions of the Rumford Medal, as consisting "of new inventions and contrivances by which the generation and preservation and management of heat and of light may be facilitated," and as "shall tend most to the good of mankind."

By his invention and perfection of the steam turbine, he has not only provided a prime mover of exceptional efficiency working at a high speed without vibration, but has taken a step forward which makes an epoch in the history of the application of steam to industry, and which is, probably, the greatest since the time of Watt. The success of the turbine is due to the experimental skill and inventive ability which have enabled him to overcome all difficulties, and to contrive a multitude of details without which the general idea of compound working could not have been translated into practice.

The use of the steam turbine for dynamo driving has been in operation for some time and is rapidly becoming common. Machines of 2000 horse-power and over are now being built. In accordance, however, with the conditions of the Rumford Trust, that the medal shall be awarded for work done within the previous two years, his claims to favourable consideration are based specially on the recent application of the steam turbine to marine navigation. The use of the steam turbine, as is well known, enabled the "Viper" and the "Cobra" to attain speeds hitherto unattainable. It has now been introduced within the last few years in vessels for mercantile purposes on the Clyde, and is being applied to ocean-going vessels.

ROYAL MEDAL.

Prof. Horace Lamb, F.R.S.

A Royal Medal is awarded to Prof. Horace Lamb for his investigations in mathematical physics.

Prof. Lamb has been conspicuous during the last twenty years by the extent and value of his contributions to mathematical physics. His writings have been distinguished by clearness, precision, and perfection of form. His early work related to hydrodynamics, the "Treatise on the Motion of Fluids," published in 1879, being one of the first adequate accounts of the modern progress of that subject.

From 1881 to 1884 he published a series of memoirs dealing with the application of harmonic analysis to vibrational problems connected with spheres and other forms of bodies.

In these papers subjects such as the subsidence of oscillations in viscous matter, the vibrations of spherical elastic solids, free electric vibrations and forced alternating currents, were treated with full application to actual phenomena. In the memoirs on electrical motions and oscillations, he developed with remarkable completeness the application of Maxwell's electric theory in this department—including such topics as the surface-concentration of alternating currents—some years before the progress of the applications of electricity had led to independent experimental discovery of the importance of these phenomena.

In 1889-90 he published ("Proc. Math. Soc.," and "Phil. Mag.") a number of valuable papers on the elastic deformation of plates and shells, which involved many new results, and also did much towards elucidating difficulties that had been encountered in this intricate subject.

Recent work has also included a discussion "On Reciprocal Theorems in Dynamics" ("Proc. Math. Soc.," 1888), a solution of the problem of the diffraction of a train of electric waves by a wire grating ("Proc. Math. Soc.," 1898), and memoirs on the dynamical theory of the refraction and selective absorption of light by gaseous media ("Trans. Camb. Phil. Soc.," 1899, "Proc. Math. Soc.," 1900). In the latter subject he traversed ground in which he afterwards found that he had been, to a considerable extent, anticipated (in Danish) by L. Lorenz.

His treatise on "Hydrodynamics," 1895, 604 pp. demy octavo, is universally recognised as the standard presentation of that subject. It maintains the best traditions of the British school of mathematical physics.

ROYAL MEDAL.

Prof. Edward Albert Schäfer, F.R.S.

The other Royal Medal is conferred upon Prof. Edward Albert Schäfer for his researches into the functions and minute structure of the central nervous system, especially with regard to the motor and sensory functions of the cortex of the brain.

Prof. Schäfer has contributed to animal physiology much work in various lines of research, and his discoveries regarding the nervous system have been especially numerous, from the time of his demonstration of nerves in the disc of medusa to his late work on the relation of the cerebral cortex of the ape to the sensory functions of the skin. Altogether, his neurological researches rank among the most important of contemporary British contributions to that branch of Physiology. It is, however, especially for his work upon the functions of one of the ductless glands—the supra-renal—that he has a claim to recognition as a Royal Medallist. In 1894 he, in conjunction with Dr. G. Oliver, succeeded in demonstrating the existence in the cortex of the supra-renal gland of a substance, called now *adrenalin*, which is the most powerful known stimulant to the cells of visceral and vascular muscles. The discovery has since been confirmed by numerous workers, British and foreign; the original researches were, however, so accurate and exhaustive as to leave little further to be added by any means available at present. The work incidentally revealed absence of this active principle in the diseased supra-renal glands in *Morbus Addisonii*, a malady considered invariably fatal. The investigation laid the first real basis for knowledge of the functions of the supra-renal gland. Recently Prof. Schäfer has, working on lines similar to his adrenalin research, extracted from another ductless gland, the pituitary, a substance exhibiting marked properties as a diuretic.

DAVY MEDAL.

Prof. Svante August Arrhenius.

The Davy Medal is awarded to Prof. Svante August Arrhenius for his application of the theory of dissociation to the explanation of chemical change.

It is not easy to over-estimate the importance of the service rendered to chemistry by Prof. Svante Arrhenius through the

publication of his memoir, presented to the Swedish Academy of Sciences on June 6th, 1883, entitled "*Recherches sur la Conductibilité Galvanique des Électrolytes.*" As far back as 1886, Sir Oliver Lodge in referring to the second part of Prof. Arrhenius's memoir, in the Report to the British Association of the Committee on Electrolysis, spoke of it as a distinct step towards a mathematical theory of chemistry, and went so far as to say that "the title affixed to it is 'The Chemical Theory of Electrolytes,' but it is a bigger thing than this—it really is an attempt at an *electrolytic theory of chemistry.*" This judgment has since been amply confirmed. Whether the theory be true or not in substance, it has proved to be a working hypothesis of the utmost value, having provided chemists for the first time with the means of fully discussing the phenomena of chemical interchange in dilute solutions of electrolytes mathematically.

Since 1883, Arrhenius has been constantly occupied in extending the application of the views put forward in his first paper.

The conception of the almost complete dissociation into their ions of strong acids and bases and of many salts in dilute solution was fully developed by him in 1887, almost simultaneously with Van't Hoff's extension of the gaseous laws to solutions. The work of the two philosophers was in fact complementary, and the extraordinary development in recent years of physical chemistry must be attributed to the co-operative influence of their concurrent views.

DARWIN MEDAL.

Mr. Francis Galton, F.R.S.

The Darwin Medal is conferred upon Mr. Francis Galton for his numerous contributions to the exact study of heredity and variation contained in "*Hereditary Genius*," "*Natural Inheritance*," and other writings.

The work of Mr. Galton has long occupied a unique position in evolutionary studies. His treatise on "*Hereditary Genius*" (1869) was not only what it claimed to be, the first attempt to investigate the special subject of the inheritance of human faculty in a statistical manner and to arrive at numerical results, but in its exact methods were, for the first time, applied to the general problem of heredity on a comprehensive scale.

The work thus begun was continued and extended in a long series of publications (*see Bibliography* in "*Natural Inheritance*," pp. 219–20), conspicuously in "*Natural Inheritance*" (1889), a

publication which marks a distinct advance in these studies, both by definition of the problems of variation and heredity and by the introduction of novel methods. Subsequently Mr. Galton, with a greater emphasis, enunciated (Roy. Soc. Proc., vol. 61, 1897, p. 401) the central conclusion to which his long investigations had led him, in the form universally familiar to biologists as "Galton's Law of Heredity," a principle now recognised as of wide application in nature.

Contributing to the total of Mr. Galton's work numerous other subjects might be mentioned, which he has elucidated with a genius peculiarly Darwinian. In all his researches he has been a pioneer, and indeed, with the single exception of Quetelet, we may almost say that no one preceded him. His work is generally acknowledged to constitute a new departure in biology, and to form a natural continuation of Darwin's labours. Besides their intrinsic value, the special charm of his writings has exercised a notable influence on the minds of others, stimulating them to work in the same fields. It may safely be declared that no one living has contributed more definitely to the progress of evolutionary study, whether by actual discovery or by the fruitful direction of thought, than Mr. Galton.

BUCHANAN MEDAL.

Dr. Sydney A. Monckton Copeman.

The Buchanan Medal, awarded every five years for distinguished services to Hygienic Science or Practice, is given to Dr. Sydney A. Monckton Copeman for his experimental investigations into the bacteriology and comparative pathology of vaccination.

Dr. Copeman is well known, both in this country and abroad, for his contributions to the scientific basis and practice of Preventive Medicine. His earliest work in this field was an investigation into lead poisoning from drinking water in Yorkshire. The importance and value of his "Report to the British Medical Association" was such as to at once attract the notice of the late Sir George Buchanan, and he was shortly after appointed one of Her Majesty's Inspectors on the Local Government Board. Then he commenced, and in such leisure time as official duties have left him, has continuously prosecuted with remarkable success, important researches into the nature of the vaccine *virus*, and on the contaminations, bacterial and other, of vaccine lymph. His work has, besides results of theoretic importance, brought practical results in

the form of great improvements in the storage and preservation of the lymph used in this country. He has also shown the possibility of obtaining useful vaccine lymph by passage through animals other than the calf. It may also be added that he has contributed a considerable amount of knowledge to the physiological chemistry of animal pigments, and has elaborated a test for distinguishing between the blood pigment of man and that of other mammals, a test which is practicable for medico-legal inquiries.

HUGHES MEDAL.

Professor Joseph John Thomson, F.R.S.

The Hughes Medal is awarded to Prof. Joseph John Thomson in recognition of his contributions to the advancement of electrical science, especially in connection with the phenomena of electric discharge through rarefied gases.

The explanation of the brilliant and remarkable phenomena attending electric discharge through highly rarefied gas has long remained an enigma, though it was early recognised by Maxwell and other philosophers that the simplicity of the conditions that must prevail in rarefied matter would probably some day furnish the key to much that is fundamental in electrical action. Following at a considerable interval the earlier work of Plücker and Hittorf, the improvement in the production and regulation of high vacua led Crookes into the exploration of a new and very striking class of phenomena, those grouped around the cathode rays, and he adduced much evidence, backed by the authority of Sir George Stokes, to show that these rays consist of streams of electrified particles projected from the cathode of the electric current. The nature and origin of these torrents of particles remained an unsolved question. Though Schuster showed that some kind of sub-permanent dissociation of electrolytic character accompanied the electric discharge, his admirably planned attempt to determine the relation between the charges and masses of the cathode particles did not lead to decisive results; while the advances made by Goldstein, Hertz, and others in Germany were dominated by the view that the phenomena were due to disturbances propagated in the ether rather than to projected particles. When in 1899 Professor J. J. Thomson announced, as the result of his measurements of the magnetic deflexion of the cathode rays, their relation to the rays of Lenard, and other properties, that each cathode particle carried the normal electrolytic molecular

charge and moved with a velocity which was a considerable fraction of that of radiation, and more especially that the mass of the particles was only about the thousandth part of the mass of the chemical atom, it was felt that, if these conclusions were confirmed, experiment had forced a way into the very ultimate foundations of physical phenomena, into regions which might fairly have been thought to be beyond human scrutiny. Weighty evidence had indeed already been adduced on theoretical grounds that any complete and consistent rationale of the known electrical laws almost demanded that electricity should be of an atomic character, like matter itself; and the magnetic action in spectra, discovered by Zeeman, illustrated and directed attention to this result; but no presumption was anywhere entertained that the electrical atom could so soon become the subject of direct experiment. By virtue of Professor Thomson's own investigations, and of many others inspired and stimulated by him, this new field of knowledge has been widely extended. It is now known that the conductivities induced in gases by the Röntgen radiation, by chemical action, by radio-active substances, even by a hot wire, are closely connected in character and all take place by electric convection of such ultimate atomic charges.

It can hardly be doubted that the progress of this new department of knowledge will gradually enable us to see one whole stage deeper into the sources of physical phenomena.

On the motion of Sir John Evans, seconded by Dr. Sclater, a vote of thanks was accorded to the President for his address, with a request that he would allow it to be printed.

The Statutes relating to the election of Council and Officers were then read, and Dr. Günther, and Major MacMahon having been, with the consent of the Society, nominated Scrutators, the votes of the Fellows present were taken and the following were declared duly elected as Council and Officers for the ensuing year:—

President.—Sir William Huggins, K.C.B., O.M., D.C.L., LL.D.

Treasurer.—Alfred Bray Kempe, M.A.

Secretaries.— { Sir Michael Foster, K.C.B., D.C.L., LL.D.
 { Joseph Larmor, M.A., D.Sc., LL.D.

Foreign Secretary.—Thomas Edward Thorpe, C.B., Sc.D.

Other Members of the Council.—William Bateson, M.A.; William Thomas Blanford, LL.D.; Prof. Hugh Longbourne Callendar, LL.D.; Francis Darwin, M.A.; Prof. Harold Baily Dixon, M.A.; Prof. George Carey Foster, LL.D.; Right Hon. Sir John E. Gorst, M.A.; Prof. John Wesley Judd, C.B., LL.D.; Right Hon. The Lord Lister, O.M., F.R.C.S.; Prof. George Downing Liveing, M.A.; Prof. Augustus Edward Hough Love, M.A.; Prof. Henry Alexander Miers, M.A.; Prof. Edward Albert Schäfer, LL.D.; Captain Thomas Henry Tizard, R.N., C.B.; Prof. Herbert Hall Turner, M.A.; Sir John Wolfe-Barry, K.C.B., LL.D.

INCOME AND EXPENDITURE ACCOUNT.

GENERAL PURPOSES.

November 12th, 1901, to November 10th, 1902.

INCOME.				EXPENDITURE.			
To Fees—				By Establishment Expenses—			
	£	s.	d.		£	s.	d.
Admissions ...	50	0	0	Advertising ...	23	8	6
Compositions ...	120	0	0	Anniversary ...	17	7	0
Annual Contributions, 262 at £3 {	1,134	0	0	Coal and Lighting ...	191	4	8
87 at £4 }				Coronation Illuminations and Decorations ...	13	18	8
Fee Reduction Fund ...	413	0	0	Electric Plant, Inspection and Repairs ...	6	6	4
			1,717	Fire Insurance ...	55	5	0
Investments—				House Expenses ...	162	13	10
Rents... ..	662	13	3	Law Charges ...	27	13	2
Dividends and Interest ...	2,506	7	0	Miscellaneous ...	82	16	4
Income Tax Recovered ...	130	7	3	Office Expenses ...	113	17	8
			3,299	Postages and Petty Charges ...	95	19	5
Publications—				Printing (Miscellaneous), and Stationery ...	244	17	9
Sales:				Salaries and Wages ...	1,993	14	0
“Philosophical Transactions”	685	9	10	Do. Retiring Gratuity ...	295	0	0
“Proceedings” ...	263	7	1	Soirées and Receptions ...	163	13	7
Malaria Publications ...	21	13	3	Taxes ...	29	4	2
Record ...	37	0	8	Tea Expenses ...	16	16	3
Other Sales ...	4	10	0				
			1,012				3,523
Less Commission ...	93	7	4				16
			918				4
Government Publication Grant ...	1,000	0	0				
			1,918	Library ...			308
			13				8
			6				6

" Catalogue—	Sales ...	11 5 11	" Publications—	Philosophical Transactions—	£ s. d.	
	Transfer from Handley Fund ...	187 7 4		Printing ...	801 19 6	
	" " Proceeds of Atlas Policy ...	299 1 7		Paper ...	226 6 3	
	Amount included in Expenditure last year now charged to Catalogue Account ...	88 18 10		Engraving and Lithography ...	242 6 0	
		586 13 8		Binding ...	48 0 5	1,318 12 2
" Miscellaneous—			" Proceedings—	Printing ...	661 11 1	
	Sale of Limail ...	9 2 1		Paper ...	137 1 3	
	Balance of Grant to International Catalogue unexpended ...	0 8 4		Engraving and Lithography ...	185 4 0	
		9 10 5		Binding ...	1 7 0	985 3 4
	Total Ordinary Income ...	7,531 5 1		Year Book and Obituary Notices Record ...	119 4 2 7 17 9	
" Catalogue—			Grants for Extraneous Publications ...		2,430 17 5	
				Do. not yet claimed ...	241 13 4 260 0 0	
					501 13 4	2,932 10 9
" Catalogue—			Supplementary Volume to 1883 ...		349 5 2	
				Index ...	237 8 6	
					586 13 8	
" Balance, being Excess of Income over Expenditure for the year ...			Total Ordinary Expenditure		7,349 9 3	
" Balance, being Excess of Income over Expenditure for the year ...			Total Ordinary Expenditure		181 15 10	
" Balance, being Excess of Income over Expenditure for the year ...			Total Ordinary Expenditure		£7,531 5 1	

BALANCE SHEET.
GENERAL PURPOSES.
November 10th, 1902.

LIABILITIES.		ASSETS.	
	£ s. d.		£ s. d.
To Tsetse Fly Account, Grant unexpended, as per last Balance Sheet	23 3 3	By Cash at Bank	1,230 5 1
" Catalogue of Scientific Papers, 1884- 1900—		" in hand	26 10 7
Balance of Fund	1,451 10 11	" International Catalogue Loan Account—	
" International Association of Academies—		As per last Balance Sheet	2,285 1 4
Subscriptions unexpended	115 7 3	Further advances, and interest, less repayments... ..	1,196 7 1
" Harrison and Sons Amount due for Printing	21 14 11	(Including interest £81 8s. 5d.)	
" Publication Grant—		Malaria Research Grant—	3,481 8 5
Grants for Extraneous Publications not yet claimed, 1901	55 0 0	Balance as per last Balance Sheet ...	2 0 2
" " " " 1902	260 0 0	" Coral Reef Committee, Advance for Funafuti Report	231 3 7
" " " " "	315 0 0		
" Income and Expenditure Account—			
Balance, as per last Balance Sheet	1,657 11 7		
Less New Electric Light Instal- lation	44 15 11		
	1,612 15 8		
Add Excess of Income over Expenditure for the year ...	181 15 10		
Add Proceeds of Sale of £1,154 11s. 9d. India 3½ per Cent. Stock to advance to International Catalogue ...	1,250 0 0		
	3,044 11 6		
	<u>£4,971 7 10</u>		<u>£4,971 7 10</u>

ESTATES AND PROPERTY OF THE ROYAL SOCIETY.

GENERAL PURPOSES.

Estate at Mablethorpe, Lincolnshire (55A. 2R. 2r.), rent £75 per annum.	
Ground Rent of House, No. 57, Basinghall Street, rent £380 per annum.	
" of 23 houses in Wharton Road, West Kensington, rents £253 per annum.	
Fee Farm Rent, near Lewes, Sussex, £19 4s. per annum.	
Stevenson Bequest. Chancery Dividend. One-fourth annual interest on Balance of Bequest still in Court. (This year, £90 18s. 0d.)	
£15,200 Mortgage Loan, 3½ per Cent., to the Duke of Norfolk.	
£3,518 0s. 3d., 2½ per Cent. Consolidated Stock in Chancery, arising from sale of the Coleman Street Estate.	
£220 7s. 6d. India 3½ per Cent. Stock.	
£1,300 India 3 per Cent. Stock.—(Earl of Derby's Bequest.)	
£592 5s. 9d. Midland Railway 2½ per Cent. Perpetual Guaranteed Preference Stock.—(Stevenson Bequest.)	
£5,000 Madras Railway Guaranteed 5 per Cent. Stock.	
£2,725 Great Northern Railway 4 per Cent. Perpetual Preference Stock.—(Stevenson Bequest.)	
£14,908 London and North Western Railway 4 per Cent. Consolidated Guaranteed Stock.—{ £12,150 General Purposes. (Stevenson Bequest.)	
£5,000 " " " Consolidated 4 per Cent. Preference Stock.	"
£5,000 North Eastern Railway 4 per Cent. Preference Stock.	"
£2,760 " " " Consolidated 4 per Cent. Guaranteed Stock.—(Stevenson Bequest.)	"
£3,333 London and South Western Railway 4 per Cent. Preference Stock.	"
£4,000 Southern Mahratta Railway 4 per Cent. Debenture Stock.	"

TRUST FUNDS. CASH ACCOUNTS, 1902.

Scientific Relief Fund.

£8,000 L. & N.W. Railway 4 per Cent. Consolidated Guaranteed Stock.
 £7,200 Great Northern Railway 3 per Cent. Debenture Stock.
 £4,340 South Eastern Railway 5 per Cent. Debenture Stock.
 £800 2½ per Cent. Annuities.

<i>Dr.</i>		£	s.	d.	£	s.	d.	<i>Cr.</i>	
To Balance, Income	...	1,474	1	3	588	3	5	By Grants	...
" Less Temporarily Invested	...	885	17	10	...	...	...	" Expenses	...
" Dividends	...	...	...	...	651	16	7	" Balance, Income	...
" Income Tax recovered	...	...	...	...	24	15	4	" Less Temporarily Invested	...
" Refund of Balance of Carrington Grant	37	10	0	£ 1,490 15 5	604 17 7
					£1,302	5	4	£ 885 17 10	£1,302 5 4

Trust Funds.

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Donation Fund.

£5,030 Great Northern Railway Perpetual 4 per cent. Guaranteed Stock.
 The Trevelyan Bequest. £1,861 6s. 8d. Great Northern Railway 3 per Cent. Debenture Stock.

	£	s.	d.	£	s.	d.
To Balance	854	16	2
" Dividends	241	15	7
" Transfer from Jodrell Fund	139	11	0
" Income Tax recovered	9	3	2
				£1,245	5	11
				£1,245	5	11
				By Grants
				" Balance
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
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Bumford

£2,367 2s. 6d. 2½ per Cent. Consolidated Stock.

	£	s.	d.	£	s.	d.
To Balance	61	12	10
" Dividends	61	3	2
" Income Tax recovered	2	11	5
				£125	7	5
By Renovating Die			
" Balance			
				£125	7	5

Bakerian and Copley Medal Fund.

Sir Joseph Copley's Gift. £1,666 13s. 4d. 2½ per Cent. Consolidated Stock.
£403 9s. 8d. 2½ per Cent. Annuities.

	£	s.	d.		£	s.	d.
To Balance	By Gold Medal—Professor J. Willard Gibbs	...	...	...
" Dividends, New 2½ per Cent. Stock	" Gift do.	...	...	...
" Dividend—Sir J. Copley's Fund	" Bakerian Lecture—Lord Rayleigh	...	...	...
" Income Tax recovered	" Renovating Die ...	...	...	...
				" Balance ...	...	...	...
					£141	13	4
					£141	13	4

The Keok Bequest.

£960 Midland Railway 2½ per Cent. Debenture Stock.

	£	s.	d.		£	s.	d.
To Dividends	By Payment to Foreign Secretary ...	...	...	...
" Income Tax recovered				
					£23	8	8
					£23	8	8

Winningham Fund.

£1,200 2½ per Cent. Consolidated Stock.

	£	s.	d.		£	s.	d.
To Balance	32	5	1	...	32
" Dividends	31	0	0	...	5
" Income Tax recovered	1	6	1	...	1
			£64	11	2		32
By Payment to Foundling Hospital	6
" Balance	1
			£64	11	2		

Croonian Lecture Fund.

One-fifth of the clear rent of an Estate at Lambeth Hill, from the College of Physicians, about £56 per annum.

	£	s.	d.		£	s.	d.
To Balance	19	5	2	...	50
" Rent	52	14	8	...	0
" Income Tax recovered	1	13	0	...	23
			£73	12	10		12
By Lecture (1902)—Professor Gamgee	10
" Balance	
			£73	12	10		

Davy Medal Fund.

£860 Madras Railway Guaranteed 5 per Cent. Stock.

	£	s.	d.		£	s.	d.
To Balance	52	19	9	...	30
" Dividends	31	0	1	...	2
" Income Tax recovered	1	6	2	...	9
			£85	6	0		4
By Gold Medal—Prof. Liveing	13
" Renovating Die	0
" Balance	3
			£85	6	0		

The Gasiot Trust.

£10,000 Italian Irrigation Bonds.

£500 2½ per Cent. Consolidated Stock.

	£	s.	d.		£	s.	d.
To Balance	208 3 6	By Payment to National Physical Laboratory ...	...	...	449 6 6
" Dividends	443 11 2	" Purchase of £500 Italian Irrigation Bonds ...	...	...	584 7 6
" £500 Bonds drawn	580 0 0	" Balance ...	...	...	216 14 4
" Income Tax recovered	18 13 8				
			<u>£1,250 8 4</u>				<u>£1,250 8 4</u>

Handley Fund.

£4,798 Lancashire and Yorkshire Railway 4 per Cent. Guaranteed Stock.

	£	s.	d.		£	s.	d.
To Dividends	180 10 6	By Transfer to Catalogue Account ...	...	...	187 7 4
" Income Tax recovered	6 16 10				
			<u>£187 7 4</u>				<u>£187 7 4</u>

The Jodrell Fund.

£5,182 14s. 10d. 2½ per Cent. Consolidated Stock.

	£	s.	d.		£	s.	d.
To Dividends	133 18 4	By Transfer to Donation Fund ...	...	...	139 11 0
" Income Tax recovered	5 12 8				
			<u>£139 11 0</u>				<u>£139 11 0</u>

The Reduction Fund.

£5,100 Metropolitan 3½ per Cent. Stock.
£9,533 London and North Western Railway 3 per Cent. Perpetual Debenture Stock.

	£	s.	d.	£	s.	d.
To Balance	79	3	2	...
" Dividends	436	14	8	...
" Income Tax recovered	17	0	9	...
By Transfer to Royal Society General Account	413
" Balance	119
						18
						7
						£532
						18
						7

Darwin Medal Fund.

£2,500 South Eastern Railway 4 per Cent. Debenture Stock.
£195 South Eastern Railway 3 per Cent. Debenture Stock.

	£	s.	d.	£	s.	d.
To Balance	112	13	1	...
" Dividends	99	11	4	...
" Income Tax recovered	3	11	3	...
By Renovating Die	8
" Balance	3
						207
						12
						8
						£215
						15
						8

Joule Memorial Fund.

£1,000 London, Brighton, and South Coast Railway Consolidated Guaranteed 5 per Cent. Stock.
£47 13s. 2d. 2½ per Cent. Annuities.

	£	s.	d.	£	s.	d.
To Balance	35	16	7	...
" Dividends	48	4	4	...
" Income Tax recovered	1	15	8	...
By Balance	85
						16
						7
						£85
						16
						7

THE NATIONAL PHYSICAL LABORATORY.

Statement, November 1, 1901, to October 31, 1902.

GENERAL FUND.

ANNUAL ACCOUNT.

	£	s.	d.		£	s.	d.
To Balance from 1901	2,069	19	4	By Laboratory Salaries and Maintenance	8,568	12	9
" Treasury Grant in aid of Salaries, &c.:—Half-year	...	...	...	" Annual Transfer to Pension Fund	400	0	0
" to September, 1902	...	...	...	" Power of Attorney Fees	1	3	0
" Laboratory Revenue	*2,000	0	0		...	...	...
" Gassiot Trust Fund	3,750	0	0		...	...	...
" Gassiot Trust Fund	449	6	6		...	...	...
" Subscriptions to March 31, 1903	850	0	0		...	...	...
" Dividends on India 3½ per Cent. Stock	10	14	3		...	...	...
" Dividends on 2½ per Cent. Consols	13	5	1		...	...	...
" Income Tax returned	1	8	9		...	...	...
	£9,144	13	11	" Balance	174	13	2
					£9,144	13	11

* In consequence of a slight difference in the date of payment, only one-half of the Treasury Grant of £4,000 has been received in the current Financial Year.

THE NATIONAL PHYSICAL LABORATORY.

GENERAL FUND—continued.

CAPITAL ACCOUNT.

	£	s.	d.		£	s.	d.
To Advance to Building Fund, 1901, repaid ...	...	2,000	0 0	By Transfer to Building Fund, 1902	...	550	0 0
" Sale of £2,046 18s. 5d. 2½ per Cent. Consols	...	1,924	1 1	" " to Equipment Account	...	2,131	7 3
" " £1,300 India 3½ per Cent. Stock	...	1,399	1 6	" Balance ...	...	2,641	15 4
		<u>£5,323</u>	<u>2 7</u>			<u>£5,323</u>	<u>2 7</u>

EQUIPMENT ACCOUNT.

	£	s.	d.		£	s.	d.
To Donations ...	...	2,000	0 0	By Equipment of Bushy House ...	...	4,131	7 3
" Transfer from Capital Account	...	2,131	7 3			<u>£4,131</u>	<u>7 3</u>
		<u>£4,131</u>	<u>7 3</u>				

BUILDING FUND.

	£	s.	d.		£	s.	d.
To Balance from 1901	259	15	6	By Repaid Capital Account—advanced 1901	...	...	2,000 0 0
" Treasury Grant in aid of Building and Equipment—				" Paymaster-General for Alterations, &c., at Bushy	...	...	3,500 0 0
additional	5,000	0	0	House, carried out by H.M. Office of Works	...	...	13 5 4
" Transfer from Capital Account	550	0	0	" Interest on Temporary Loan from Bank	...	...	151 6 10
" Income Tax returned	3	4	5	Extras—Builder's Account, &c.	...	...	96 18 4
				" Wiring...	...	...	49 18 0
				Sundries	...	...	1 11 5
				Balance	...	...	£5,812 19 11
	£5,812	19	11				

PENSION FUND.

	£	s.	d.		£	s.	d.
£1,255 2s. 5d. 2½ per Cent. Consolidated Stock.				By Purchase of £437 7s. 8d. 2½ per Cent. Consols	...	...	423 15 4
To Balance from 1901	13	3	6	" Balance	...	...	16 3 8
" Annual Transfer from General Fund	400	0	0				£439 19 0
" Dividends on 2½ per Cent. Consols	26	15	6				
	£439	19	0				

The following Table shows the progress and state of the Society with respect to the number of Fellows as at November 10, 1902:—

	Patron and Royal.	Foreign.	Com- pounders.	£4 yearly.	£3 yearly.	Total.
Nov. 30, 1901 ..	2	44	123	83	250	502
Since Elected ..	..	..	+ 2	+ 5	+ 13	+ 20
Since Deceased ..	..	— 2	— 5	— 2	..	— 9
Nov. 10, 1902 ..	2	42	120	86	263	513

ACCOUNT OF GRANTS FROM THE DONATION FUND IN 1902.

	£	s.	d.
National Physical Laboratory, for the expenses attending the opening ceremony at Bushy House	130	3	11
Evolution Committee, for the cost of production of 500 copies of a coloured plate, in connection with the inquiry as to progressive melanism in Moths	45	0	0
Prof. Marey, in aid of the objects of the Marey Institute, Paris	50	0	0
	<u>£225</u>	<u>3</u>	<u>11</u>

MINUTES OF MEETINGS OF THE ROYAL SOCIETY.

March 6, 1902.

Sir WILLIAM HUGGINS, K.C.B., D.C.L., President, in the Chair.

A List of the Presents received was laid on the table, and thanks ordered for them.

In pursuance of the Statutes, the names of Candidates for election into the Society were read as follows :—

Adeney, Walter Ernest, D.Sc.	Crookshank, Professor Edgar
Allen, Alfred Henry, F.C.S.	March, M.B.
Ardagh, Sir John, Major-General, R.E.	Darwin, Horace, M.A.
Baker, H. Brereton, M.A.	Davison, Charles, Sc.D.
Ballance, Charles Alfred, F.R.C.S.	Dendy, Professor Arthur, D.Sc.
Bather, Francis Arthur, M.A.	Dobbie, Professor James John- stone, M.A.
Bayliss, William Maddock, M.A.	Goodrich, Edwin S., M.A.
Binnie, Sir Alexander Richardson, M.I.C.E.	Gray, Professor Thomas, B.Sc.
Bourne, Gilbert C., M.A.	Harcourt, Prof. Leveson Francis Vernon, M.A.
Bovey, Professor Henry T., M.A.	Hardy, William Bate, M.A.
Boyce, Professor Rubert, M.B.	Harker, Alfred, M.A.
Bridge, Professor Thomas William, M.A.	Harmer, Frederic William, F.G.S.
Brodie, Thomas Gregor, M.D.	Hiern, William Philip, M.A.
Brown, Professor Adrian John, F.C.S.	Hills, Edmond Herbert, Major, R.E.
Brown, John.	Hopkinson, Edward, D.Sc.
Bruce, John Mitchell, M.D.	Hough, Sydney Samuel, F.R.A.S.
Budge, Ernest A. Wallis, Litt.D.	Jukes-Browne, Alfred John, F.G.S.
Callaway, Charles, D.Sc.	Kidston, Robert, F.G.S.
Cardew, Philip, Major R.E.	Knott, Cargill Gilston, D.Sc.
Chattaway, Frederick Daniel, M.A.	Lees, Charles H., D.Sc.
Clowes, Frank, D.Sc.	Letts, Professor Edmund Albert, D.Sc.
Copeman, Sydney Monckton, M.D.	Lewis, Sir William Thomas, Bart., M.Inst.C.E.
Corfield, Professor William Henry, M.D.	MacArthur, John Stewart, F.C.S.

Macleaen, Prof. Magnus, D.Sc.	Rutherford, Professor Ernest, M.A.
MacMunn, Charles Alexander, M.D.	Salomons, Sir David, Bart., M.A.
Mallock, Henry Reginald Arnulph, M.Inst.C.E.	Saunders, Edward.
Mance, Sir Henry C., C.I.E.	Slater, William Lutley, M.A.
Masson, Professor Orme, M.A.	Sharpe, R. Bowdler, LL.D.
Mather, Thomas.	Sidgreaves, Rev. Walter, S.J., F.R.A.S.
Matthey, Edward, F.C.S.	Smith, Fred., Lieut.-Col.
Maunder, Edward Walter, F.R.A.S.	Smith, James Lorrain, M.D.
Meyrick, Edward, B.A.	Smith, William Robert, M.D.
Michell, John Henry, M.A.	Stead, John Edward, F.C.S.
Mill, Hugh Robert, D.Sc.	Strahan, Aubrey, M.A.
Molesworth, Sir Guilford, K.C.I.E.	Swinburne, James, M.Inst.C.E.
Newall, Hugh Frank, M.A.	Swinton, Alan Archibald Campbell, Assoc. M.Inst.C.E.
Notter, James Lane, Surg. Lieut.-Col., M.D.	Symington, Prof Johnson, M.D.
Nuttall, George Henry Falkner, M.D.	Tarleton, Professor Francis Alexander, Sc.D.
Oliver, John Ryder, Major-General (late R.A.), C.M.G.	Tatham, John F. W., F.R.C.P.
Parsons, Professor Frederick Gymer, F.R.C.S.	Townsend, Professor John S., M.A.
Payne, Joseph Frank, M.D.	Wager, Harold, F.L.S.
Perkin, Arthur George, F.C.S.	Walker, James, M.A.
Petrie, Prof. William Matthew Flinders, D.C.L.	Watkin, Colonel, H. S. S., R.A., C.B.
Plimmer, Henry G., M.R.C.S.	White, William Hale, M.D.
Pope, William Jackson, F.C.S.	Whitehead, Alfred North, M.A.
Rose, Thomas Kirke, D.Sc.	Wiley, Arthur, D.Sc.
Russell, James Samuel Risien, M.D.	Wilson, Professor Ernest.
	Woodhead, Professor German Sims, M.D.

The following Papers were read :—

- I. "On the Spark Discharge from Metallic Poles in Water." By Sir NORMAN LOCKYER, K.C.B., F.R.S.
- II. "Experimental Researches on Drawn Steel. Part I.—Magnetism and Changes of Temperature. Part II.—Resistivity, Elasticity, and Density, and the Temperature Coefficients of Resistivity and Elasticity." By J. R. ASHWORTH. Communicated by Professor SCHUSTER, F.R.S.

- III. "On the Effect of Magnetisation on the Electric Conductivity of Iron and Nickel." By G. BARLOW. Communicated by Professor A. GRAY, F.R.S.
- IV. "The Differential Equations of Fresnel's Polarisation-Vector, with an Extension to the Case of Active Media." By JAMES WALKER. Communicated by Professor R. B. CLIFTON, F.R.S.
- V. "On a Convenient Terminology for the Various Stages of the Malaria Parasite." By Professor E. RAY LANKESTER, F.R.S.
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March 13, 1902.

Sir WILLIAM HUGGINS, K.C.B., D.C.L., President, in the Chair.

A List of the Presents received was laid on the table, and thanks ordered for them.

The Croonian Lecture, "On Certain Chemical and Physical Properties of Hæmoglobin," was delivered by Professor A. GAMGEE, F.R.S.

March 20, 1902.

Sir WILLIAM HUGGINS, K.C.B., D.C.L., President, in the Chair.

A List of the Presents received was laid on the table, and thanks ordered for them.

The following Papers were read:—

- I. "Development of the Layers of the Retina in the Chick after the Formation of the Optic Cup." By JOHN CAMERON, M.B., Ch.B. (Edin.). Communicated by Professor MCINTOSH, F.R.S.
- II. "On a Peculiarity of the Cerebral Commissures in certain Marsupialia, not hitherto recognised as a Distinctive Feature of the Diprotodontia." By Professor G. ELLIOT SMITH, M.D., Ch.M. Communicated by Professor HOWES, F.R.S.

- III. "The Classification of the Elements." By Professor H. E. ARMSTRONG, V.P.R.S.
- IV. "Persulphuric Acids." By Professor H. E. ARMSTRONG, V.P.R.S., and Dr. T. M. LOWRY.
- V. "On a Throw-testing Machine for Reversals of Mean Stress." By Professor OSBORNE REYNOLDS, F.R.S., and J. H. SMITH, M.Sc.
- VI. "On the Equilibrium of Rotating Liquid Cylinders." By J. H. JEANS, B.A. Communicated by Professor G. H. DARWIN, F.R.S.
- VII. "A Portable Telemeter or Range-finder." By Professor GEORGE FORBES, F.R.S.

The Society adjourned over the Easter Recess to Thursday. April 24.

April 24, 1902.

Sir WILLIAM HUGGINS, K.C.B., D.C.L., President, in the Chair.

A List of the Presents received was laid on the table, and thanks ordered for them.

Sir James Stirling, a member of His Majesty's Most Honourable Privy Council, was balloted for and elected a Fellow of the Society.

The following Papers were read:—

- I. "On Skin Currents. Part III.—The Human Skin." By Dr. A. D. WALLER, F.R.S.
- II. "Antarctic Origin of the Tribe Schœneæ." By C. B. CLARKE, F.R.S.
- III. "A New Interpretation of the Gastric Organs of Spirula, Nautilus, and the Gastropods." By J. E. S. MOORE and W. B. RANGLES. Communicated by Professor HOWES, F.R.S.
- IV. "Absolute Magnetic Observations at the Valencia Observatory (Cahirciveen, co. Kerry), 1899, 1900, and 1901." By J. E. CULLUM. Communicated by the EARL OF ROSSE, F.R.S.

May 1, 1902.

Sir WILLIAM HUGGINS, K.C.B., D.C.L., President, in the Chair.

A List of the Presents received was laid on the table, and thanks ordered for them.

In pursuance of the Statutes, the names of the Candidates recommended for election into the Society were read, as follows:—

Baker, H. Brereton.	Kidston, Robert.
Bovey, Professor Henry T.	Mather, Thomas.
Boyce, Professor Rubert.	Michell, John Henry.
Brown, John.	Newall, Hugh Frank.
Hardy, William Bate.	Petrie, Professor W. M. Flinders.
Harker, Alfred.	Pope, William Jackson.
Hough, Sidney S.	Saunders, Edward.
Willey, Dr. Arthur.	

The following Papers were read:—

- I. "Coefficients of the Cubical Expansion of Ice, Hydrated Salts, Solid Carbonic Acid, and other Substances at Low Temperatures." By Professor JAMES DEWAR, F.R.S.
- II. "The Conditions determinative of Chemical Change and of Electrical Conduction in Gases, and of the Phenomena of Luminosity." By Professor H. E. ARMSTRONG, F.R.S.
- III. "Contributions to a Theory of the Capillary Electrometer."—
 - I. The Insulation-Resistance of the Capillary Electrometer, and the Minimum Quantity of Electricity required to produce a Visible Excursion." By G. J. BURCH, F.R.S.
- IV. "The Development of *Echinus esculentus*, together with some Points in the Development of *E. miliaris* and *E. acutus*." By Professor E. W. MACBRIDE. Communicated by A. SEDGWICK, F.R.S.*

* The short paper read November 28, 1901, and printed in the "Proceedings," Vol. 69, p. 268, is to be considered as an abstract of this paper.

May 15, 1902.

Professor H. E. ARMSTRONG, Vice-President, in the Chair.

Sir George D. Taubman Goldie, a member of His Majesty's Most Honourable Privy Council, was balloted for and elected a Fellow of the Society.

A List of the Presents received was laid on the table, and thanks ordered for them.

The following Papers were read :—

- I. "Cyanogenesis in Plants. Part II.—The Great Millet (*Sorghum vulgare*).” By Professor W. R. DUNSTAN, F.R.S., and Dr. T. A. HENRY.
- II. "On some Phenomena affecting the Transmission of Electric Waves over the Surface of the Sea and Earth.” By Captain H. B. JACKSON, R.N., F.R.S.
- III. "Microscopic Effects of Stress on Platinum.” By T. ANDREWS, F.R.S., and C. R. ANDREWS.
- IV. "A Note on the Recrystallisation of Platinum.” By W. ROSENHAIN, B.A. Communicated by Professor EWING, F.R.S.
- V. "On Electromotive Wave accompanying Mechanical Disturbance in Metal immersed in Electrolyte.” By Professor J. C. BOSE. Communicated by Professor REINOLD, F.R.S.
- VI. "On the Effect of a Longitudinal Magnetic Field on the Internal Viscosity of Wires of Nickel and Iron, as shown by Change of the Rate Subsidence of Torsional Oscillations.” By Professor ANDREW GRAY, F.R.S., and ALEXANDER WOOD.

The Society adjourned over the Whitsuntide Recess to Thursday, May 29.

May 29, 1902.

Sir WILLIAM HUGGINS, K.C.B., D.C.L., President, in the Chair.

A List of the Presents received was laid on the table, and thanks ordered for them.

The following Papers were read :—

- I. "The Minute Structure of Metals and other Plastic Solids." By G. BEILBY. Communicated by Sir W. C. ROBERTS-AUSTEN, K.C.B., F.R.S.
- II. "The Influence of Varying Amounts of Carbon Dioxide in the Air on the Photosynthetic Process of Leaves and on the Mode of Growth of Plants." By H. T. BROWN, F.R.S., and F. ESCOMBE, B.Sc., F.L.S.
- III. "On the Influence of an Excess of Carbon Dioxide in the Air on the Form and Internal Structure of Plants." By Professor J. B. FARMER, F.R.S., and S. E. CHANDLER.
- IV. "On the Structure of the Gills of Lamellibranchia." By Dr. W. G. RIDWOOD. Communicated by Professor E. RAY LANKESTER, F.R.S.

June 5, 1902.

Annual Meeting for the Election of Fellows.

Sir WILLIAM HUGGINS, K.C.B., D.C.L., President, in the Chair.

The Statutes relating to the Election of Fellows having been read, Professor Everett and Dr. Buchan were, with the consent of the Society, nominated Scrutators, to assist the Secretaries in the examination of the balloting lists.

The votes of the Fellows present were collected, and the following Candidates were declared duly elected into the Society :—

Baker, H. Brereton.
 Bovey, Professor Henry T.
 Boyce, Professor Rubert.
 Brown, John.
 Hardy, William Bate.
 Harker, Alfred.
 Hough, Sydney S.
 Kidston, Robert.

Mather, Thomas.
 Michell, John Henry.
 Newall, Hugh Frank.
 Petrie, Professor W. M. Flinders.
 Pope, William Jackson.
 Saunders, Edward.
 Willey, Dr. Arthur.

Thanks were given to the Scrutators.

June 5, 1902.

Sir WILLIAM HUGGINS, K.C.B., D.C.L., President, in the Chair.

The Right. Hon. Sir George Taubman Goldie, a member of His Majesty's Most Honourable Privy Council, was admitted into the Society.

Major A. W. Alcock (elected 1901) was admitted into the Society.

A List of the Presents received was laid on the table, and thanks ordered for them.

The following Papers were read :—

- I. "On the Movements of the Flame in the Explosion of Gases." By Professor H. B. DIXON, F.R.S.
 - II. "Contributions to the Study of Flicker. Paper II." By T. C. PORTER. Communicated by LORD RAYLEIGH, F.R.S.
 - III. "Effects of Strain on the Crystalline Structure of Lead." By J. C. W. HUMFREY, B.Sc. Communicated by Professor EWING, F.R.S.
 - IV. "The Spectra of Potassium, Rubidium, and Cæsium, and their Mutual Relations." By H. RAMAGE, B.A. Communicated by Professor LIVEING, F.R.S.
 - V. "On some Definite Integrals and a New Method of reducing a Function of Spherical Co-ordinates to a Series of Spherical Harmonics." By Professor A. SCHUSTER, F.R.S.
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June 12, 1902.

Professor EMERSON REYNOLDS, Vice-President, in the Chair.

Professor Rubert Boyce, Mr. Thomas Mather, Professor W. M. Flinders Petrie, Mr. William Jackson Pope, and Mr. Edward Saunders were admitted into the Society.

A List of the Presents received was laid on the table, and thanks ordered for them.

The following Papers were read :—

- I. "The Influence of an Atmosphere of Oxygen on the Respiratory Exchange." By L. HILL, F.R.S., and J. J. R. MACLEOD.
- II. "The Influence of High Pressures of Oxygen on the Circulation of the Blood." By L. HILL, F.R.S., and J. J. R. MACLEOD.
- III. "On the Parasitism of *Pseudomonas destructans*." By Professor M. C. POTTER. Communicated by Sir M. FOSTER, Sec. R.S.
- IV. "On the Toxic Properties of the Saliva of certain 'Non-poisonous' Colubrines." By Professor A. ALCOCK, F.R.S., and Dr. L. ROGERS.
- V. "The Dissipation of Energy by Electric Currents induced in an Iron Cylinder when rotated in a Magnetic Field." By Professor E. WILSON. Communicated by Sir W. PREECE, K.C.B., F.R.S.
- VI. "A Note on the Effect of Daylight upon the Propagation of Electromagnetic Impulses over Long Distances." By G. MARCONI. Communicated by Professor FLEMING, F.R.S.
- VII. "Note on a Magnetic Detector of Electric Waves which can be employed as a Receiver for Space Telegraphy." By G. MARCONI. Communicated by Professor FLEMING, F.R.S.

June 19, 1902.

Sir WILLIAM HUGGINS, K.C.B., D.C.L., President, in the Chair.

A List of the Presents received was laid on the table, and thanks ordered for them.

The following Papers were read :—

- I. "On the Correlation between the Barometric Height at Stations on the Eastern Side of the Atlantic." By Miss F. E. CAVE-BROWNE-CAVE and Professor KARL PEARSON, F.R.S.
- II. "On Two Methods for the Limitation and Regulation of Chloroform when administered as an Anæsthetic." By A. VERNON HARCOURT, F.R.S.

- III. "On some Phenomena which suggest a Short Period of Solar and Meteorological Changes." By Sir NORMAN LOCKYER, F.R.S., and Dr. W. J. S. LOCKYER.
- IV. "Note on the Effect of Mercury Vapour on the Spectrum of Helium." By Professor J. NORMAN COLLIE, F.R.S.
- V. "On the Measurement of Temperature. Part I. On the Pressure Coefficients of Hydrogen and Helium at Constant Volume, and at Different Initial Pressures. Part II. On the Vapour Pressures of Liquid Oxygen at Temperatures below its Boiling Point on the Constant Volume Hydrogen and Helium Scales. Part III. On the Vapour Pressures of Liquid Hydrogen at Temperatures below its Boiling Point on the Constant Volume Hydrogen and Helium Scales." By Dr. M. W. TRAVERS, G. SENTER, B.Sc., and Dr. A. JAQUEROD. Communicated by Professor W. RAMSAY, F.R.S.
- VI. "The Seed-fungus of *Lolium Temulentum*, L., the Darnel." By E. M. FREEMAN. Communicated by Professor MARSHALL WARD, F.R.S.
- VII. "The Stability of the pear-shaped Figure of Equilibrium of a Rotating Mass of Liquid." By Professor G. H. DARWIN, F.R.S.
- VIII. "Note on the Conchoidal Fracture of Glass." By W. ROSENHAIN. Communicated by Professor EWING, F.R.S.
- IX. "Influence of Temperature on the Conductivity of Electrolytic Solutions." By W. R. BOUSFIELD and Dr. T. MARTIN LOWRY. Communicated by Professor ARMSTRONG, F.R.S.
- X. "On an Approximate Solution for the Bending of a Beam of Rectangular Cross-section under any System of Load, with Special Reference to Points of Concentrated and Discontinuous Loading." By L. N. G. FILON. Communicated by Dr. C. CHREE, F.R.S.
- XI. "The Geological Structure of Monzoni and the Upper Fassa." By MARIA OGILVIE GORDON. Communicated by Professor LAPWORTH, F.R.S.

The Society adjourned over the Long Vacation to Thursday, November 20.

November 20, 1902.

Dr. W. T. BLANFORD, Vice-President, in the Chair.

Mr. H. Brereton Baker was admitted into the Society.

A List of the Presents received was laid on the table, and thanks ordered for them.

In pursuance of the Statutes, notice of the ensuing Anniversary Meeting was given from the Chair.

The Rev. Robert Harley, Professor Meldola, and Dr. R. H. Scott were by ballot elected Auditors of the Treasurer's accounts on the part of the Society.

The following Papers, received during the Recess, and published in full or in abstract, in accordance with the Standing Orders of Council, were read in title:—

“Observations on ‘Flicker’ in Binocular Vision.” By C. S. SHERRINGTON, M.A., M.D., F.R.S.

“Harmonic Tidal Constants for certain Australian and Chinese Ports.” By THOMAS WRIGHT, of the Nautical Almanac Office. Communicated by Professor G. H. DARWIN, F.R.S.

“On the Influence of the Prolonged Action of the Temperature of Liquid Air on Micro-organisms, and on the Effect of Mechanical Trituration at the Temperature of Liquid Air on Photogenic Bacteria.” By ALLAN MACFADYEN, M.D. Communicated by Professor JAMES DEWAR, F.R.S.

“On the Measurement of the Bactericidal Power of small Samples of Blood under Aerobic and Anaerobic Conditions, and on the Comparative Bactericidal Effect of Human Blood drawn off and tested under these Contrasted Conditions.” By A. E. WRIGHT, M.D., Professor of Pathology, Army Medical School, Netley. Communicated by Professor J. R. BRADFORD, F.R.S.

“On Changes in Elastic Properties produced by the sudden Cooling or ‘Quenching’ of Metals.” By JAMES MUIR, B.A., D.Sc. Communicated by Professor J. A. EWING, F.R.S.

“The Fracture of Metals under repeated Alternations of Stress.” By J. A. EWING, LL.D., F.R.S., and J. C. W. HUMFREY, B.A., St. John's College, Cambridge.

“An Intracellular Toxin of the Typhoid Bacillus.” By ALLAN MACFADYEN, M.D., and SYDNEY ROWLAND, M.A. Communicated by LORD LISTER, F.R.S.

The following Papers were read :—

- I. “Report on the recent Eruption of the Soufrière, in St. Vincent, and of a Visit to Mont Pelée. Part I.” By TEMPEST ANDERSON, M.D., B.Sc., F.G.S., and JOHN S. FLETT, M.A., D.Sc., F.G.S. Communicated by the Secretaries of the Royal Society.
- II. “On the Correlation of the Mental and Physical Characters in Man. Part II.” By ALICE LEE, D.Sc., MARIE A. LEWENZ, B.A., and KARL PEARSON, F.R.S.
- III. “Contributions to a Theory of the Capillary Electrometer. II.—On an Improved Form of Instrument.” By G. J. BURCH, M.A. Oxon., F.R.S.
- IV. “An Experimental Determination of the Variation of the Critical Velocity of Water with Temperature.” By E. G. COKER, M.A. Cantab., D.Sc. Edin., and S. B. CLEMENT, B.Sc. Communicated by Professor OSBORNE REYNOLDS, F.R.S.

November 27, 1902.

Sir WILLIAM HUGGINS, K.C.B., O.M., President, in the Chair.

Mr. Alfred Harker and Mr. Robert Kidston were admitted into the Society.

A List of the Presents received was laid on the table, and thanks ordered for them.

Professor Waldemar Christofer Brögger, Professor Gaston Darboux, Professor Ewald Hering, Mr. George William Hill, Professor Albert Abraham Michelson, Baron Ferdinand von Richthofen, Graf H. zu Solms-Laubach, and Professor Julius Thomsen were elected Foreign Members of the Society.

In pursuance of the Statutes, notice of the ensuing Anniversary Meeting was given from the Chair, and the list of Officers and Council nominated for election was read as follows :—

President.—Sir William Huggins, K.C.B., O.M., D.C.L., LL.D.

Treasurer.—Alfred Bray Kempe, M.A.

Secretaries.— { Sir Michael Foster, K.C.B., D.C.L., LL.D.
 { Joseph Larmor, M.A., D.Sc., LL.D.

Foreign Secretary.—Thomas Edward Thorpe, C.B., Sc.D.

Other Members of the Council.—William Bateson, M.A.; William Thomas Blanford, LL.D.; Professor Hugh Longbourne Callendar, M.A., LL.D.; Francis Darwin, M.A.; Professor Harold Baily Dixon, M.A.; Professor George Carey Foster, LL.D.; Right Hon. Sir John E. Gorst, M.A.; Professor John Wesley Judd, C.B., LL.D.; Right Hon. the Lord Lister, O.M., F.R.C.S.; Professor George Downing Liveing, M.A.; Professor Augustus Edward Hough Love, M.A.; Professor Henry Alexander Miers, M.A.; Professor Edward Albert Schäfer, LL.D.; Captain Thomas Henry Tizard, R.N., C.B.; Professor Herbert Hall Turner, M.A.; and Sir John Wolfe-Barry, K.C.B., LL.D.

The following Papers were read:—

- I. "Experiments on the Effect of Mineral Starvation on the Parasitism of the Uredine Fungus *Puccinia dispersa* on Species of *Bromus*." By Professor H. MARSHALL WARD, F.R.S.
- II. "Note upon Descending Intrinsic Spinal Tracts in the Mammalian Spinal Cord." By Professor C. S. SHERRINGTON, F.R.S., and Dr. E. E. LASLETT.
- III. "The Inter-relationship of Variola and Vaccinia." By Dr. S. MONCKTON COPEMAN. Communicated by LORD LISTER, F.R.S.
- IV. "The Colour-physiology of the Higher Crustacea." By F. KEEBLE and F. W. GAMBLE. Communicated by Professor S. J. HICKSON, F.R.S.

December 1, 1902.

Anniversary Meeting.

Sir WILLIAM HUGGINS, K.C.B., O.M., President, in the Chair.

The Report of the Auditors of the Treasurer's accounts was read, and the thanks of the Society were given to the Treasurer and to the Auditors.

The List of Fellows deceased and Fellows elected into the Society since the last Anniversary was read.

The Report to the Society from the Council upon their work during the past year was, upon the motion of the President, received.

The President delivered his Anniversary Address, and, on the motion of Sir John Evans, seconded by Dr. Sclater, the thanks of the Society were given to the President for his Address, and he was requested to allow it to be printed.

The Awards of the Medals for the year were announced as follows, and the Medals were presented from the Chair:—

The Copley Medal.....	To Lord Lister, F.R.S.
The Rumford Medal ...	„ the Hon. Charles A. Parsons, F.R.S.
A Royal Medal	„ Prof. Horace Lamb, F.R.S.
A Royal Medal	„ Prof. Edward A. Schäfer, F.R.S.
The Davy Medal	„ Prof. Svante August Arrhenius.
The Darwin Medal	„ Mr. Francis Galton, F.R.S.
The Buchanan Medal ..	„ Dr. Sydney A. Monckton Copeman.
The Hughes Medal	„ Prof. Joseph John Thomson, F.R.S.

The President having, with the consent of the Society, nominated Dr. Günther and Major MacMahon as scrutators to assist the Secretaries in examining the balloting lists for the election of Council and Officers, the votes of the Fellows present were taken. The Scrutators reported that the Council and Officers nominated at the preceding meeting had been duly elected, and their names were accordingly announced from the Chair.

The thanks of the Society were given to the Scrutators.

December 4, 1902.

Sir WILLIAM HUGGINS, K.C.B., O.M., President, in the Chair.

A List of the Presents received was laid on the table, and thanks ordered for them.

The President announced that he had appointed as Vice-Presidents for the ensuing year—

The Treasurer.
Dr. Blanford.
Professor G. Carey Foster.
Professor Judd.

The following Papers were read :—

- I. "On the 'Blaze Currents' of the Incubated Hen's Egg." By Dr. A. D. WALLER, F.R.S.
- II. "On the 'Blaze Currents' of the Crystalline Lens." By Dr. A. D. WALLER, F.R.S., and A. M. WALLER.
- III. "A Contribution to the Question of 'Blaze Currents.'" By Dr. A. DURIG. Communicated by Dr. A. D. WALLER, F.R.S.
- IV. "On the Similarity of the Short-period Pressure Variation over Large Areas." By Sir NORMAN LOCKYER, F.R.S., and Dr. W. J. S. LOCKYER.
- V. "Isomeric Change in Benzene Derivatives.—The Interchange of Halogen and Hydroxyl in Benzenediazonium Hydroxides." By Dr. K. J. P. ORTON. Communicated by Professor ARMSTRONG, F.R.S.
- VI. "On the Vibrations and Stability of a Gravitating Planet." By J. H. JEANS. Communicated by Professor G. H. DARWIN, F.R.S.

December 11, 1902.

SIR WILLIAM HUGGINS, K.C.B., O.M., President, in the Chair.

Mr. Hugh Frank Newall was admitted into the Society.

A List of the Presents received was laid on the table, and thanks ordered for them.

The following Papers were read :—

- I. "On certain Properties of the Alloys of the Gold-Silver Series." By the late Sir WM. ROBERTS-AUSTEN, K.C.B., F.R.S., and Dr. T. KIRKE ROSE.
- II. "The Spectrum of γ Cygni." By Sir NORMAN LOCKYER, K.C.B., F.R.S., and F. E. BAXANDALL.

- III. "Abnormal Changes in some Lines in the Spectrum of Lithium."
By HUGH RAMAGE, B.A. Communicated by Professor
LIVEING, F.R.S.
- IV. "Quaternions and Projective Geometry." By Professor C. J.
JOLY, F.T.C.D. Communicated by Sir ROBERT BALL, F.R.S.
- V. "An Error in the Estimation of the Specific Gravity of the
Blood by Hammerschlag's Method, when employed in connec-
tion with Hydrometers." By Dr. A. G. LEVY. Communi-
cated by Sir VICTOR HORSLEY, F.R.S.
- VI. "The Specific Heats of Metals and the Relation of Specific Heat
to Atomic Weight. Part II." By Professor W. A. TILDEN,
F.R.S.

The Society adjourned over the Christmas Recess to Thursday,
January 22, 1903.

OBITUARY NOTICES OF FELLOWS DECEASED.

HENRY TRIMEN. 1843—1896.

To write the memorial of a personal friend whose scientific career has run parallel with one's own is, at the best, a sad task. If I have not hitherto performed it for Henry Trimen it is because, as often as I have attempted it, the accomplishment has seemed too painful.

Henry Trimen was born on October 26, 1843, at Paddington, Middlesex. He was the youngest of four brothers, of whom the third, Roland, one of our Fellows, and a distinguished entomologist, was the third. The father, Richard, traced his ancestry to a stock which, under similar names, exists both in Cornwall and Brittany. He himself, a man of easy circumstances, was—without any scientific pretension—a great lover of Nature, and an excellent observer; he possessed, too, a keen artistic perception, and some ability in execution.

The two younger brothers were closely associated in their early bringing up. They derived from their father, both by inheritance and example, an early delight in natural objects. He continually encouraged them in their attempts to form collections of shells, insects, plants, fossils, etc., often accompanying them in country excursions, and pointing out interesting animals and plants. The elder brother remembers how, when it became necessary to restrict in some definite direction accumulations which were becoming unmanageable, it was solemnly decided that Henry was to occupy himself with plants, and Roland with insects. Henry, however, never so completely specialised as to lose all taste for other branches of natural history. These facts, if apparently trivial, are worth recording, because the process by which a naturalist is now evolved has, during the last half century, undergone a complete change. It may indeed be doubted whether the class itself is not on the verge of extinction.

Trimen entered King's College School in 1855. There I made his acquaintance on the strength of a "collecting tin," familiar to botanists, which I saw him one day carrying. It may be doubted whether, now-a-days, in a London day-school, two boys would be found to strike up a life-long friendship on a common taste for field botany.

Companionship once established, we spent most of our half-holidays in excursions round London. With the ambition of schoolboys, we soon projected a Flora of Middlesex. We kept careful notes of our

excursions, and spared no pains in the critical determination of the plants we collected. The material gradually accumulated, and at last we determined to undertake a detailed botanical survey of the county. Latterly we had to divide the work, exploring different districts separately. On one occasion, Trimen, while examining a wood in the northern part of the county, encountered a fellow collector, who turned out to be John Stuart Mill, known, perhaps, to few as an ardent field botanist. On another occasion, in 1866, Trimen had the good fortune to discover, at Staines, *Wolffia arrhiza*, which was new to the British Flora, and which is remarkable as the smallest known, as it is, perhaps, the smallest possible, of flowering plants. As the work proceeded, we derived much assistance and encouragement from the Rev. W. W. Newbould and the Hon. J. Leicester Warren (afterwards Lord de Tabley), both of whom are dead.

We soon found that the task we had undertaken, if an interesting, was by no means an easy one. The continuous growth of London gradually obliterates the natural vegetation. Areas long since covered with houses had been the hunting ground of some of the fathers of English botany, such as Turner, L'Obel, and Gerarde. We were therefore obliged to engage in an exhaustive study of all the records of Middlesex plants to be found in botanical literature, from the earliest times, and to spend a considerable amount of labour in reducing their names to modern equivalents.

The result was sufficiently striking and of some scientific importance. Although only 141 square miles in area, and, at first sight, far from promising any but moderate results, we obtained, either from trustworthy records, most of which we were successful in confirming, or from our own observations, definite evidence of the occurrence in the county of 826 species out of a total in the British Isles of 1425, and some material additions have since been made to our enumeration.

The Flora was published under our joint names in 1869. Critics have amiably described it as "an epoch-making book in the history of British botany," and "a model for subsequent compilers of local floras." I have the less hesitation in acquiescing in these favourable judgments, as the book owes its merits almost entirely to Trimen's labours. The task fell upon him of writing out the manuscript for the press, and condensing the large accumulations of notes and observations into a lucid and critical summary, and this he accomplished with the fidelity and judgment which always characterised his work. He added, what was entirely his own, a careful study of the life and work of the early London botanists; and this is a valuable contribution to an obscure branch of scientific history.

Trimen entered the Medical School of King's College early in 1860. After spending 1864 in Edinburgh, where he followed the clinical instruction of Professor Bennett, he took the degree of M.B. with honours at the University of London. He acted for a time as District Officer of Health in the Strand District during a cholera epidemic, and also filled the post for some years of Curator of the Medical Museum at King's College, and that of Lecturer on Botany at St. Mary's Hospital Medical School from 1867 to 1872. He never practised his profession, but in 1869 entered the Botanical Department of the British Museum as an assistant.

From 1870 to 1879 Trimén edited the "Journal of Botany," which had become the repertory for the critical study of the British Flora. He was engaged from 1875 to 1879, in collaboration with his old teacher, Professor Bentley, in the publication of the four volumes of "Medicinal Plants," which is now regarded generally as the standard authority on Pharmacology in this country. It contains singularly few errors, or rather points in which subsequent research has corrected its statements. It exhibits, in a striking degree, the qualities of thoroughness and caution which Trimén eminently possessed.

Trimén was at bottom a naturalist in whom the love of living things was not easily extinguished. About 1879 he began to feel the restraints of museum work irksome. He enquired of me if some congenial colonial scientific post could be found for him. It so happened that just at this juncture the Directorship of the Royal Botanic Garden, Peradeniya, Ceylon, had become vacant by the retirement of the distinguished botanist Dr. Thwaites. The Government felt themselves fortunate in having so capable a man as Trimén to take his place, and though the Trustees of the British Museum showed their appreciation of his services by endeavouring to retain them on more favourable terms, Trimén elected to proceed to Ceylon.

The task he undertook proved no easy one, but he fulfilled it for the next sixteen years with signal success. He had acquired some experience of official work at the British Museum, but the larger scope of administrative control, and the somewhat exacting duty of acting as scientific adviser to a planting community, was new to him. The colony had gone through a disastrous crisis, owing to the destruction of its principal staple, coffee, by "leaf disease." The period of transition to new industries was exceptionally trying. It fell to Trimén to assist the planter by answering enquiries addressed to him on every conceivable subject. For this his accurate knowledge and imperturbable good humour made him an almost ideal instrument. His services in this respect were not unappreciated. The *Ceylon Observer* did full justice to him on his death. It wrote: "Never before in the history

of the island has more attention been given in our Botanic Gardens to every question bearing on the economic, as well as scientific side of planting, and tropical agriculture generally, than during the last sixteen years." It had never, however, been Trimen's intention, in accepting a colonial post, to subside into the mere official. He had always had the ambition to accomplish some considerable work for science, and in Ceylon he found a task worthy of his ability ready to his hand. A comprehensive work, or *Flora*, descriptive of the plants indigenous to Ceylon, had long been demanded. Trimen's predecessor, Thwaites, had prepared the way by accumulating ample collections, and by the publication of an enumeration without descriptions. Ceylon plants had also been included, as far as they were known, in Sir Joseph Hooker's *Flora of British India*. The vegetation of Ceylon presents, however, a problem in geographical distribution of peculiar interest. Although Indian in type, it yet has striking Malayan affinities, though of a peculiar endemic character. It therefore amply merited an independent study. To this task Trimen soon devoted himself, and steadily worked at it till his death. He had first to carry out a thorough reorganisation of his department, and to remodel the extensive tropical garden, which the failing health of his predecessor had allowed to fall somewhat into disorder. The result excited the admiration of our Foreign Member, Dr. Treub, the Director of the Buitenzorg Botanic Garden. Trimen's hospitality attracted many scientific friends to Peradeniya, and Haeckel wrote: "The seven days I spent in his delightful bungalow were, indeed, to me, seven days of creation."

The first volume of his *Handbook* appeared in 1893, the second in 1894, and the third, the last he was able to accomplish, in 1895. For some time he had been troubled with increasing deafness. It unhappily continued till he was absolutely deprived of the sense of hearing. This was followed by a loss of power in his lower limbs. He came to England in 1895 for advice. His general health was, however, little affected, and though the nature of his malady completely baffled his physicians, they were not without hope of his recovery. His cheerfulness of mind remained as unabated as his anxiety to complete his *Handbook*.

The state of his health so obviously unfitted him for his official duties that the Ceylon Government was compelled to retire him on a pension on July 1, 1896. The unanimous vote of the Legislative Council, however, gave him the exceptional privilege of a special allowance, in addition to his pension, for six months "in order to complete the scientific work upon which he is now engaged."

He returned to Ceylon for the purpose, but though he became rapidly worse, and could not move without assistance, he still worked

without intermission at the completion of his task. For the last few months of his life he was confined almost entirely to his room. On October 14 he became seriously ill. The following day he rallied a little, and actually attempted to resume work on the Flora, making a few scarcely-decipherable notes. The following day he sank into a state of coma, and passed away painlessly. He was buried not far from the resting place of his predecessor, Dr. Thwaites.

At the request of the Ceylon Government, Sir Joseph Hooker generously undertook to complete the Handbook. This required two more volumes, which appeared respectively in 1898 and 1900, in addition to a quarto volume of plates of the more interesting species, which had been prepared under Trimen's direction. From the papers placed in his hands, Sir Joseph was able to print the important order *Euphorbiaceæ* upon which Trimen had laboured almost to the day of his death, and pretty much as he left it. The rest of the work was contributed by Sir Joseph himself.

The Royal Society Catalogue, down to 1883, enumerates 50 of Trimen's separate papers. He was elected F.R.S. in 1888.

In manner Trimen was somewhat retiring, if not a little shy, perhaps, with an old-fashioned gravity. Though he devoted his life to science, the world, in its wider aspects, was full of interest to him, and he was an admirable correspondent. Of a tolerant and happy disposition, I do not suppose he ever made an enemy. His death was sincerely regretted by the European community in Ceylon, and no less mourned by the natives who worked under him. He died unmarried.

His scientific work belonged to the older rather than to the new school, but he had a strict sense of form and a disciplined literary method. If not brilliant, it is always painstaking, trustworthy and judicious. He was essentially a man of facts, and for theorising he had little taste. Of such men science has ample need.

W. T. T. D.

WILLIAM MARCET. 1828-1900.

William Marcet was born at Geneva on May 13th, 1828. He came of a family distinguished in medicine and science. His grandfather, Alexander Marcet (1770-1822), belonged to an old Genevese family, but having been compelled by political circumstances to leave Switzerland, went to Edinburgh, where he took his degree of Doctor of Medicine, and having become a naturalized English citizen, settled in London, and was eventually physician to Guy's Hospital. He published several papers of importance on chemical and physical

questions in relation to medicine, and became a Fellow of this Society. After the re-settlement of Europe he returned to Geneva, where he resided until his death. He was married in England to Jane Haldimand (1769–1858), who also belonged to a family of Swiss origin, and who was a woman of more than ordinary ability. She was the author of a number of treatises on education, one of which, “*Mary’s Grammar*,” is still in request; while another, “*Conversations on Chemistry*,” went through no less than sixteen editions. Their son, Francis Marcet (1803–1883) was educated at Westminster School, but went to Geneva at the age of eighteen, and resided there for the greater part of his life. He eventually became Professor of Physics in the Academy of Sciences of Geneva, and Councillor of State, but in 1870 he again took up residence in London. He published many papers, chiefly of chemico-physical and meteorological character, and was also a Fellow of this Society. He served for several years on the Council of University College, London, an institution in which his son, the subject of this memoir, also took a keen interest, and in which in the later years of his life he carried out most of his researches.

With such an ancestry and home surroundings, it is not surprising to find that the bent of William Marcet’s mind was in the direction of the elucidation of problems of a chemico-medical and physico-medical nature; thus we find him at different times of his life investigating such chemical problems as the composition of foods and their changes in digestion, the measurement of the amount of heat produced by the human body under varying conditions of rest and activity, and making observations on climatology, the value of which was testified by the election of their author to the distinguished position of President of the Royal Meteorological Society.

William Marcet’s boyhood was spent at Geneva, where he was a pupil of M. Toepffer, who appears to have been attracted by the vivacity and originality of his young pupil, whom he has put into his “*Voyages en Zigzag*,” under the appellation of Sorbière. After studying for some years in the Academy of Sciences of Geneva, Marcet went to Edinburgh at the age of eighteen to study medicine. He took his degree there in 1850, and shortly after proceeded to Paris, further to work at chemistry under Verdeil, with whom he undertook a series of investigations upon the composition of the blood in man and mammals, and upon the chemical principles of the food and their changes in digestion, the joint articles being communicated to the *Société de Biologie*. Returning to London in 1853—where he intended to settle down to the practice of medicine, and where he was before long appointed Assistant-Physician to the Westminster Hospital—he continued to pursue these researches upon food and digestion, and

in 1856 published a work of considerable importance "On the Composition of Food and how it is Adulterated; with practical directions for its Analysis." In the following year, at the comparatively early age of 29, he was elected a Fellow of this Society, to which, as we have seen, both his father and grandfather also belonged. Soon after this he was appointed Lecturer on Chemistry and Toxicology at the Westminster Hospital Medical School. In 1863 he resigned his appointments at the Westminster Hospital, but a few years later, in 1867, was made Assistant-Physician to the Brompton Hospital for Consumption, being at this time especially interested in the study of tubercle. In this year, struck with the importance of the observations of Villemin on the inoculation of tuberculosis, Marcet repeated his experiments, and obtained conclusive results from the inoculation of the products of expectoration of consumptive patients, showing that these results could be employed for purposes of diagnosing tubercle. He more especially interested himself with the laryngeal form of phthisis, and for its appropriate investigation familiarised himself with the use of the laryngoscope, then but recently introduced. He published a small volume on the subject in 1869.

Two other matters to which Marcet devoted his attention during these busy early years of London life were the influence of alcohol upon the animal organism, and the pathological chemistry of the cattle plague, the last-named work appearing in the Third Report of the commissioners appointed to inquire into the "Origin and Nature of Cattle Plague," published in 1866. The results of his researches on alcoholic intoxication were published in 1860, after having been brought before the British Association at the Aberdeen meeting in the preceding year. He also took an active part in the proceedings of a Committee appointed by the Royal Medical and Chirurgical Society to investigate the physiological action of anæsthetics, and the safest mode of administering them.

The interest which Marcet took in the subject of phthisis, combined, doubtless, with a desire to obtain greater leisure during the summer months for the prosecution of researches and for travelling, of which he was always fond, led him to give up his London practice and to establish himself during the winter months in practice on the Riviera. Here he passed nine winters—three at Nice and six at Cannes. From that time he occupied himself almost exclusively with researches having for their object the investigation of phenomena connected with respiration and with the influence of climate and altitude upon it. Marcet was a keen and active mountaineer, and a member of both our own and of the Swiss Alpine Clubs, but he loved to combine scientific observations with the pleasure of climbing, and he would often be

accompanied in his ascents by apparatus for the collection of the gases of respiration, the guide whom he took with him serving also as a scientific assistant. In this way he investigated the effects upon the respiratory exchange of altitudes in Switzerland as considerable as the Breithorn (13,685 ft.), the Col Théodule (10,899 ft.), and the Col de Géant (11,030 ft.). Suspecting that the extreme cold experienced at these heights in Switzerland might materially modify the results of altitude, Marcet determined to repeat the observations upon the Peak of Teneriffe, and here in 1878, at heights of from 8,000 to nearly 13,000 feet, he camped out for no less than three weeks, in the company of a guide from Chamounix, making numerous meteorological observations and analyses of air, under circumstances of extreme difficulty and personal discomfort. His experiences are recounted in his book on "The Principal Southern and Swiss Health Resorts," which was published in 1883, and which contains much valuable information concerning the climatology of the principal places in question. During the last twenty years of his life Marcet gave up practice altogether and devoted his energies during the winter and spring entirely to scientific research, spending the summer and autumn partly in travelling, but mainly residing at his family property, Malagny, near Versoix, on the Lake of Geneva. Both here and at Yvoire, on the Savoy side of the lake, where he resided when in Switzerland, before his father's death, he spent his leisure time yachting and mountaineering. For his winter work, he set up a laboratory in London, at first in his own house, but from 1883 onwards in one of the rooms belonging to the Physiological Department of University College, which was placed at his disposal. Here, with the aid of skilled assistants, he carried on his researches upon the gases of respiration, for which his ingenuity devised a number of new and beautifully-constructed pieces of apparatus, amongst which may be specially mentioned an improved form of spirometer, with a bell accurately balanced at every plane of immersion, and a new form of eudiometer for determining the percentage of oxygen in expired air. Here also he caused to be constructed a large copper chamber enclosed within a jacket of non-conducting material, which he employed as an ice-calorimeter for the human subject, the air inside the chamber being both kept in motion and of a constant temperature by being driven by electric fans over the ice, the melting of which was to serve as a measure of the amount of heat produced during the stay of the subject of experiment within the chamber. This apparatus, which appears to represent the first attempt at human calorimetry by the aid of the ice-method, was ultimately presented by Marcet to Professor

Schäfer, and is now set up in the Physiological Laboratory of the University of Edinburgh. The results of Marcet's later observations, both upon the respiratory exchanges and upon the conditions of heat-formation in the human body, were for the most part communicated to the Royal Society and published in the "Proceedings" or "Transactions," usually in the joint names of himself and his assistant—for no one could be more punctilious than Marcet in acknowledging the work of others, even if immediately inspired and directed by himself. Many of his results were collected and published with much additional matter in his "Contribution to the History of Respiration of Man," which appeared in 1897, and was an extension of the Croonian Lectures which he delivered before the Royal College of Physicians in 1895. The methods which Marcet employed, and the principal facts which they had yielded, were for the most part demonstrated at the meetings of the Physiological Society, of which he was one of the first and always remained one of the most active members. His genial presence will long be missed by his fellow-members.

Marcet was in all things enthusiastic and optimistic; he threw himself into everything which he undertook with unexampled energy, whether it were the pursuit of science, the practice of medicine, yacht-racing, or climbing. His conversation and manners were animated, and, while delighting to discuss scientific problems, he was always careful to avoid saying or writing anything which could wound an opponent. His friends were all who knew him: he made no enemies. Although his general health was good, he was for a long time subject to severe attacks of asthma, which would often be followed by prolonged periods of relative ill-health, but his optimistic disposition soon enabled him to recover his spirits and to throw himself just as enthusiastically as ever into work or play. Towards the end of his life, however, more serious symptoms affecting the heart and kidneys became apparent, so that he was compelled to relinquish all work, and to voyage for the sake of health. It was on such a journey up the Nile that he was seized with the attack from which, on March 4th, 1900, at Luxor, in Upper Egypt, he died in the 72nd year of his age.

(E. A. S.)

SIR HENRY WENTWORTH ACLAND, BART. 1815—1900.

Sir Henry Wentworth Acland, Bart., was born August 15th, 1815, at Killerton, in Devonshire. He died at Oxford, October 16th, 1900. He was educated at Harrow, and Christ Church, Oxford. He graduated in Arts (M.A.) in 1840, and in Medicine (D.M.) in 1848. He was

appointed Reader in Anatomy at Christ Church in 1845, and became a Fellow of the Royal Society in 1847. In 1851 he was appointed Radcliffe Librarian, and in 1858 Regius Professor of Medicine. In 1874 he was elected President of the General Medical Council.

Acland's scientific career may be said to have begun in 1843, when, having attended the lectures of Professor Owen during the time that he was pursuing his ordinary medical studies at St. George's Hospital, and having thereby acquired an interest in Comparative Anatomy, he repaired to Edinburgh in order to profit by the greater advantages which the northern University then afforded. As a student of anatomy he came under the inspiring influence of John Goodsir, who was then Demonstrator, and Curator of the Museum, but not yet Professor. Acland appears to have worked in the Edinburgh Museum under Goodsir's direction for two years with great industry, and no doubt acquired a very thorough knowledge both of human and comparative anatomy.

In 1845, when a vacancy occurred in Dr. Lee's Readership in Anatomy at Christ Church, Oxford, he became a candidate for the post and was elected. He thereupon prepared to convey his anatomical preparations to Oxford, and with this view returned from Edinburgh by sea, bringing with him not only his collection, but also his invaluable assistant, Mr. Charles Robertson, whose life from that day to the present time has been with perfect fidelity given to the service of the University.

Acland's arrival in Oxford from Edinburgh with his skeletons and dissections was an incident deserving commemoration, for it marked the introduction into the studies of the University of a new element—the study of living nature, or as we now call it, of biology. Acland's predecessor, Dr. Kidd, had complied with the conditions under which he held the office, by giving instruction in human anatomy with the aid of models and a certain number of permanent preparations; among which a skeleton which hung from the ceiling of the dingy room which was appropriated to the Reader, is remembered as most conspicuous. Acland, on his appointment, appears to have at once resolved that he would teach anatomy as he had learned it from Goodsir. Although the Founder of the Christ Church Readership (Dr. Lee) had strictly defined the subject to be taught, directing that the holder of the office should confine himself to “explaining and regularly demonstrating . . . all parts of the human body with their uses,” he considered himself to be justified in giving a much wider range to his teaching. He, however, followed Dr. Lee's directions so far as to divide his course of lectures and practical instruction into two parts; in one he described the form and structure of the parts of man and animals

(Anatomy), and in the other their uses (Physiology). As the whole course was completed in thirty lectures, he could not do more (as he stated to the University Commissioners of 1851) than give his hearers "a sketch of the general nature of the objects of anatomical and physiological knowledge"—his aim being to secure for natural science a place in liberal education, not to train either anatomists or physiologists.

The change that was thus made in the subject of the Readership (which be it remembered constituted the only means of instruction then available in the University for students of biology) had several consequences, each of which had an important relation to future progress. One of these was that for nearly 40 years Oxford ceased to exist even in name as a place of medical education; another that, on the principle already referred to, namely, that the study of animals and plants should be considered as a part of the Oxford educational system, the subject of biology took its place side by side with the exact sciences in the newly formed School of Natural Science. Thus it eventually became possible for Oxford students, after passing the First Public Examination, to obtain a Class, by proficiency in the sciences of observation. The third important result which followed from Acland's work at Christ Church was the establishment of the University Museum. The collection of specimens which Acland had brought from Edinburgh had grown during his tenure of the Christ Church Readership into a Museum which occupied several rooms and consisted of some 1,700 anatomical preparations. These were arranged by him for the use of students after the plan of the Museum of the College of Surgeons. The classification was Hunterian, *i.e.*, physiological, the parts of the animal body being grouped according to their uses. To the dissections and osteological preparations, which were for the most part the work of Mr. Robertson, were added a considerable number of specimens of marine animals,—the spoils of dredging expeditions on the south coast and at the Scilly Islands, in which Acland had the aid of Dr. Victor Carus, now Professor of Zoology at Leipzig. The Christ Church Museum was still further enriched by Dr. Rolleston, who succeeded Acland as Reader in 1858, so that when Rolleston was appointed to the newly constituted Linacre Professorship, it became apparent that the time had come for the University to take up the work that Christ Church had begun. Meanwhile Acland and others who had taken part in founding the new Natural Science School, had with great energy and perseverance promoted a Scheme for establishing an Institution in which provision could be made for all the studies connected with that School. The success of this scheme, which was in great measure due to his exertions, afforded the occasion

for the supreme effort of his life, the erection of the Museum Building, and the transference thereto of the Christ Church Collection.

So long as Rolleston held the Linacre Professorship, the principle by which Dr. Acland was guided in the arrangement of the collection at Christ Church, namely, that it should be ordered on the plan of the Hunterian Museum of the College of Surgeons, in London, was not departed from; but after Rolleston's death, in 1881, a great change took place in the aspect of the Collection. The progress of Science required that the old comparative anatomy should give place to the new "Animal Morphology." The most valuable of the preparations may still be seen, but the Hunterian collection no longer exists. The great anatomist is still represented by Mr. Hope Pinker's beautiful statue, but of the "philosophic views" which Acland desired should be introduced to the student by the arrangement described in his synopsis, published in 1853, there is now no indication. The change was inevitable, but those perhaps may be excused who, remembering the work done by Acland, Rolleston, and their coadjutors in the fifties, sixties, and seventies, regret that in giving place to the new order, some recollection of the old was not preserved.

With the completion of the Museum and the transference thereto of the Christ Church Collection, the great work which Acland had set himself to do for the advancement of science, was accomplished. He continued to take an active interest in the educational work of the Museum, and especially in the development and progress of the Anatomical Department, but opposed every effort to establish anything like a "Medical School" in the University.

The attitude assumed by Acland with reference to the teaching of Medicine during the long period which intervened between his appointment to the Regius Professorship, and the creation in 1890 of the Professorship of Human Anatomy, by which the University at last provided for the instruction of medical students, can be best understood by reference to his published writings, and particularly to the evidence he gave before the two University Commissions. When in the fifties he took a leading part in the establishment of the School of Natural Science, he expressed in a remarkable letter addressed by him to Mr. Gladstone (published as a pamphlet), the conviction that the effect of that change would be "to bring medical students to Oxford," and that unless this were the result, the school would probably fail. Again in the seventies, when he gave evidence before the Second Commission, he urged the immediate appointment of a Professorship of "Comparative Pathology" as the one thing needful for the completion of the system of instruction already in operation at the Museum. The fact that notwithstanding these decided opinions,

he consistently opposed the very thing which he regarded as so conducive to the prosperity of the Natural Science School, namely, the introduction of the "Medical Student" into Oxford, seems at first sight difficult to explain. The real reason for his decided opposition to a "Medical School" was (to quote from the pamphlet above referred to) his apprehension of the "jeopardy of *substituting* professional for general education,"—his fear lest, if students were induced to engage too soon in professional studies, medical graduates would be sent from Oxford into the profession who had not received an Oxford education.

Sir Henry Acland's published writings were numerous. They related chiefly to academical or educational questions, or to subjects connected with Public Health or Sanitary Administration. As perhaps the best specimen of his literary style, a biography may be referred to for which the Fellows of the Royal Society of forty years ago were indebted to him—that of the President of the Society, the first Sir Benjamin Brodie. His most important contribution to the Science of which he was so successful an expositor was undoubtedly the "Synopsis of the Physiological Series" in the Christ Church Museum, in which he set forth in clear language the principles which had guided him in its arrangement.

Several friends who were Acland's pupils in the far off days when he was Christ Church Reader, have given the writer their impressions of his lectures. They agree that his prelections were eminently suited to awaken interest in biological science, and that the lecturer was not only master of his subject, but was able to clothe in attractive language anatomical details which, had they been less skilfully handled, would have repelled his too fastidious auditors.

The preceding paragraphs may serve to inform the reader as to the work Acland accomplished as an academic teacher during the years that he held the Readership of Anatomy. After this period he devoted himself chiefly to the promotion of the general interests of the University, and to the furtherance of innumerable works of public utility both in the University and in the City. Although it was by these efforts that he was best known to the world, the scope of the present notice does not admit of more detailed reference to them. There were, however, two or three directions in which Acland's exertions contributed so materially to the advancement of science, that it will be proper to advert to them more fully.

For all but half a century (1851–1900) Acland held the University office of Radcliffe Librarian, and discharged its duties with singular ability and indefatigable industry. The Radcliffe Library contains, as I daresay most readers are aware, works relating to Mathematics, Physics, Chemistry, Biology (including Anthropology) and Geology.

Acland was largely instrumental in bringing about the removal of the Library from the Camera Radcliffiana, which now forms part of the Bodleian, to the Museum Building, where rooms specially adapted for its reception had been prepared. The removal of the books afforded to Acland the opportunity of carrying out the organisation of the Library in a satisfactory way, and brought its resources within easy reach of persons engaged in the study of Natural Science whether as teachers or as students. All Oxford workers are deeply indebted to him for the exceptional advantages which the Library affords of ready access to the literature of their subjects.

Another way in which Acland contributed to the advancement of Science was by his efforts for the improvement of Medical Education, first as a Member and subsequently as President of the General Council of Medical Education. On this subject, his successor in that important office, Sir William Turner, has been good enough to set down some notes, which he permits the writer to subjoin by way of conclusion to his own imperfect sketch.

As a Member and afterwards as President of the Council, "he took a leading part in the discussion of educational questions. His University training and environment kept continually before him the necessity of regarding Medicine as one of the learned professions, for which the special training required for its efficient practice must be based on a sound, general, and scientific education. In addition to his work in Oxford as a busy practitioner, Acland's attention had continually been drawn to the public relations of his profession. He kept in view that it had important duties to discharge to the State and to the community generally, and he took an active share in the discussions in the Council on educational questions bearing on the wider relations of his profession. As far back as 1868 he was appointed Chairman of a Committee to report on the steps proper to be taken for granting Diplomas or Certificates of Proficiency in State Medicine, and in providing for their inclusion in the Medical Register. In the course of time many of the examining authorities instituted Examinations on Public Health and conferred diplomas, but it was not until the passing of the Medical Act, 1886, that these diplomas became registrable, and that the sanction of the State was then given to the possession of such diplomas, as a qualification to discharge the duties of a Medical Officer of Health.

"As President of the Council Sir Henry Acland was courteous in manner, graceful in speech, dignified in presence. His academic and social position, and the innate nobility of his nature, had from an early period of his life gained for him the friendship and confidence of the leaders of the medical profession, of statesmen of both parties, and

others eminent in public life, and contributed in no small measure to ensure harmonious relations between the Medical Council and the departments of Government with which it is brought into official communication. From his urbanity and the consideration which he showed his colleagues he inspired in them a feeling of affectionate regard and respect."

J. B. S.

MAXWELL SIMPSON. 1815—1902.

On the 26th day of February, 1902, died at West Kensington an eminent chemist of the last generation.

Maxwell Simpson, B.A., M.B., M.D., LL.D. (Hon. Dub.), D.Sc., F.R.S., F.C.S., F.I.C., F.K.Q.C.P. (Dub.), Member of the Senate of the Queen's University, son of Thomas Simpson, Esq., of Beach Hill, Co. Armagh, Ireland, was born on March the 15th, 1815, and was educated at the famous private school of Dr. Henderson, at Newry, Co. Down, from whence he proceeded to Trinity College, Dublin. Dr. Lever, the celebrated novelist, an enthusiastic admirer of physiology, by means of his brilliant conversation, caused young Simpson to choose medicine as his profession. Accordingly, he attended besides the lectures of the arts course also lectures on medical subjects. His taste for medicine, however, did not improve with knowledge, and after four years of study he left Trinity College without a medical degree. He next went to London, where he stayed for some years. From London Simpson made once an excursion to Paris. On this occasion he attended a lecture of the celebrated chemist, Dumas, who, by his brilliant discourse, induced Simpson to choose chemistry as a profession. Accordingly, after his return to London, he attended the lectures of Prof. Graham, at University College, and also worked in the professor's laboratory.

Maxwell Simpson married, in 1845, Mary, the second daughter of the late Samuel Martin, of Loughorne, Co. Down, a lady who shared with him all the vicissitudes of life for 55 years, and to whom he was most affectionately attached. They settled in Dublin, where Simpson, in 1847, accepted the Chair of Chemistry in the Medical School of Park Street. Every lecturer at this Institution was expected to hold a medical degree. To satisfy this regulation he took up his medical studies again, passed the prescribed examinations, and took the degree of M.B. In the following year, 1848, he exchanged his chair in Park Street for one in the Medical School of St. Peter's Street, Dublin, where he delivered lectures before large classes till the spring of 1851.

Until the end of the first quarter of the last century instruction in practical chemistry could not be obtained at the Universities. Laboratories existed, but they were only intended for the private use of the professor. It is one of the merits of Liebig to have superseded this state of things, and to have founded, in 1824, at Giessen, a large laboratory for the instruction of students in practical chemistry. The School of Chemistry at Giessen soon became famous; students came from all parts of Europe to study chemistry under the guidance of Liebig. This great success caused other Universities to adopt the system of Liebig, so that about the middle of the century many of the German Universities were provided with public laboratories. One of the best of these existed at Marburg, under the direction of Prof. Bunsen. Maxwell Simpson decided to go there and learn the Continental system of teaching the science of chemistry. The authorities of the Medical School in St. Peter's Street gave him leave of absence for three years, and he, with his whole family, left for Marburg in the spring of 1851. At Marburg a great disappointment awaited him. Prof. Bunsen had accepted a call to Breslau and had just left Marburg. His successor at the University, Prof. Kolbe, enjoyed a considerable reputation as a chemist, which induced Simpson to remain at Marburg till 1853. He then went to Heidelberg, where, in the meantime, Bunsen had accepted the Chair of Chemistry. At Heidelberg Simpson did his first original work.

Nitrogen in organic compounds was at the time usually determined according to the method of Will and Varrentrapp. This method is not applicable to cyanides and certain amides. The methods of Liebig and Dumas are not reliable when the compounds under examination are difficult to burn. The problem, to discover a method which could be used in all cases, remained to be solved. Simpson discovered such a method in Bunsen's laboratory.

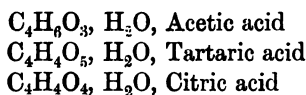
His method is based on the same principles as those of Liebig and Dumas, but differs from theirs by the form of the apparatus, the use of mercuric oxide in place of cupric oxide, and the measurement of the gas over mercury instead of over water. (*"Jour. Chem. Soc.,"* vi, 289.)

Fifty years have passed since the introduction of this method; other methods have since been recommended, but none more accurate or reliable than Simpson's. In 1854 he returned to Dublin, and took up again his lectures at St. Peter's Street School of Medicine. He discharged these duties till the end of the session, in 1856, when he finally gave up his lectureship, and proceeded with his family to Paris and commenced to work there in Wurtz's laboratory.

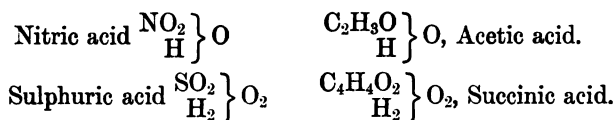
As early as 1843 it was recognised that the atoms of different elements are not of the same chemical value. Two atoms of chlorine

were called an equivalent of chlorine, two atoms of aluminium three equivalents of aluminium. The chemical value of the oxygen atom used to be taken as the unit. As the knowledge of compound organic radicals was still in its infancy, their valency was not taken into consideration. The formulæ of the acids represented equivalent quantities, viz., such quantities of different acids as would neutralise the same quantity of a base.

As examples may be given the formulæ which Berzelius gave to acetic, tartaric, and citric acids:—



To Gerhardt is due the merit of having shown, in 1851, that the formulæ of acids ought to represent molecular and not equivalent weights, and of having given definitions of mono- and polybasic acids, which are still considered to be correct. These definitions, together with Gerhardt's-Williamson's theory of types, led to the recognition of the chemical values of compound radicals.



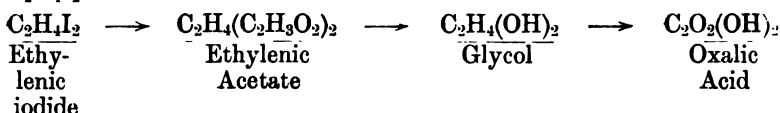
It is at once seen that the chemical value of SO_2 is twice that of NO_2 , or, if acetyl is called monovalent, succinyl must be regarded as divalent. NO_2 and $\text{C}_2\text{H}_3\text{O}$ each replace one atom of hydrogen in one molecule of water, SO_2 and $\text{C}_4\text{H}_4\text{O}_2$, each two atoms of hydrogen in two molecules of water. A monobasic acid is derived from one, a dibasic acid from two molecules of water.

The important discovery of the anhydrous acids R_2O and $\text{RR}'\text{O}$, by Gerhardt, and the results of Berthelot's* investigation of the action of acids on glycerine, confirmed these views.

Berthelot concluded from his results that glycerine stood to a monovalent alcohol in the same relation as a tribasic acid did to a monobasic acid. Wurtz more fully explained this view. Hence, if there are alcohols of the structure of monobasic and tribasic acids, then there ought to be likewise alcohols corresponding to dibasic acids. Berzelius had pointed out, in 1839, that probably an alcohol $\text{C}_2\text{H}_6\text{O}_2$ could be prepared from ethylenic chloride $\text{C}_2\text{H}_4\text{Cl}_2$. No notice was taken of this suggestion until Wurtz, prompted by the above con-

* Compt. Rend., xxxviii, 668.

siderations, successfully carried out the idea of Berzelius by using $C_2H_4I_2$ instead of the chloride:—



About the time when Simpson arrived in Paris Wurtz was engaged with the aforesaid investigations, which suggested the further question: can an alcohol of the structure of glycerine be prepared from $C_2H_5I_3$ or another halogen compound of vinyl? Simpson undertook to answer this question. A series of very carefully executed experiments gave him only negative results. Accordingly, he concluded that a glycerine, $C_2H_6O_3$, in the two-carbon group does not appear to exist.

The view of the constitution of glycerine $[C_3H_5(OH)_3]$, as pointed out before, had, however, not been strictly proved. Gerhardt* considered the formula $\left. \begin{array}{c} C_3H_5O \\ H_3 \end{array} \right\} O_2$ more probable than the one given before. To decide which of the two is to be preferred, Simpson examined the action of acids on glycol. His results were analogous to those obtained by the action of acids on glycerine, consequently

$$\begin{array}{l} - OH \\ \text{the structure of glycerine is: } C_3H_5 - OH, \text{ analogous to that of glycol.} \\ - OH \end{array}$$

(“Proc. R. S.,” ix, 725, and x, 114.)

The experiments of Hofmann and Wurtz had established the important fact that the hydrogen of ammonia can be replaced by monovalent compound radicals. Cloez and Natanson had attempted the replacement of the hydrogen in ammonia by the divalent radical C_2H_4 without obtaining very satisfactory results. Simpson now commenced experiments with the view of substituting a trivalent compound radical for hydrogen in ammonia. He heated for this purpose allylic tribromide with an alcoholic solution of ammonia, expecting to obtain a triamine $C_3H_5(NH_2)_3$. This expectation was not realised, a secondary amine $N \left\langle \begin{array}{c} (C_3H_4Br)_2 \\ H \end{array} \right.$ being the result. This base is interesting, because it yields picoline, C_6H_7N , by further treatment with alcoholic ammonia.†

Many of the halogen compounds of the olefines, which Simpson wanted for his experiments, were at the time hardly known at all, others only very imperfectly. He, accordingly, investigated more carefully the following: C_3H_6ClI (“P.,”† xii, 278); C_2H_4ClBr (“P.,” xxvii, 118); $C_3H_5Cl_2Br$ (“P.,” xxvii, 118); C_3H_6ClBr (“P.,”

* *Traité Chim. Organique*, iv, 699.

† “*Phil. Mag.*,” (4), xvi, 257.

‡ P = “*Proc. Roy. Soc.*”

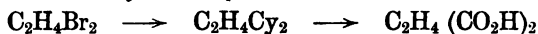
xxvii, 118); CH_3CHBrI ("P.," xxvii, 424); $\text{C}_2\text{H}_3\text{Br}_3$ ("Phil. Mag.," (4), xiv, 544); and prepared for the first time; $\text{C}_2\text{H}_4\text{ClI}$ ("P.," xi, 590, xii, 278); $\text{C}_3\text{H}_6\text{ClI}$ ("P.," xii, 278); $\text{C}_2\text{H}_3\text{ClBrI}$ ("P.," xiii, 540); $\text{C}_3\text{H}_5\text{Cl}_2\text{I}$ ("P.," xiii, 540); $\text{C}_2\text{H}_4\text{BrI}$ ("P.," xxii, 51); $\text{C}_2\text{H}_3\text{Br}_2\text{I}$ ("P.," xxii, 51); $\text{C}_3\text{H}_6\text{BrI}$ ("P.," xxii, 51); $\text{C}_3\text{H}_5\text{Br}_2\text{Cl}$ ("P.," xxvii, 118); CH_3CHClI ("P.," xxvii, 424).

This work repeatedly occupied him in the course of his scientific career.

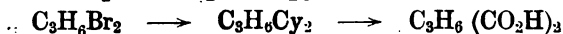
The hydride and the chloride of acetyl react with great facility with many substances. Consequently, they may be expected to react with each other, producing hydric chloride and $(\text{C}_2\text{H}_3\text{O})_2$. But $(\text{C}_2\text{H}_3\text{O})_2 = \text{C}_4\text{H}_6\text{O}_2 =$ crotonic acid. Hence the question: is crotonic acid formed when aldehyde and acetylic chloride act on each other? Wurtz had already obtained in one experiment a compound of the two substances, which with water decomposed into the two components. He now suggested the repetition of the experiment to Simpson, who, however, could only confirm Wurtz's previous results. Experiments with acetylic chloride and the aldehyde $\text{C}_5\text{H}_{10}\text{O}$ produced likewise only a compound of the two.

At the conclusion of the experiments mentioned in the foregoing pages, about the end of the year 1859, Simpson left Paris and returned to Dublin, where, in his own house, he fitted up, in a back kitchen, a little laboratory, and there, in spite of many imperfections, he carried out some of his best work.

Dumas, Malaguti and Leblanc had shown that the ammonial salts of acetic-, benzoic-, valerianic-, and trichloroacetic acids, by heating with phosphoric acid (P_2O_5), lose the elements of water and become converted into the corresponding nitriles. And, when the nitriles are heated with solutions of potassic hydrate, the corresponding ammonia salts are reformed. Kolbe and Frankland observed about the same time (1847) the formation of ammoniac acetate by the action of potassic hydrate on methylic cyanide, and of ammoniac propionate by a similar metamorphosis of ethylic cyanide. In these changes only monovalent radicals took part. Simpson undertook to investigate the behaviour of cyanides of divalent and trivalent compound radicals with hot solutions of potassic hydrate. He commenced with ethylenic cyanide; *the result was the potassium salt of ordinary succinic acid*:—



("P.," x, 574, xi, 190). Ethylenic cyanide submitted to the same treatment was expected to yield potassic isosuccinate. Instead of this the common succinate was obtained. Propylenic cyanide and potassic hydrate solution produced *potassic pyrotartrate*:—

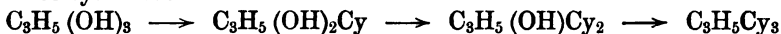


The structure of the members of the oxalic acid series was made clear by these results. Allylic tricyanide boiled with potassic hydrate gave Simpson the potassium salt of tricarballic acid :—

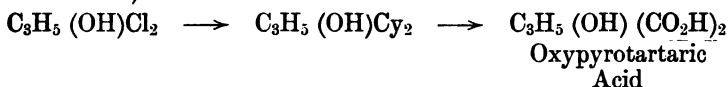


("P.," xii, 236). This acid, which is related to aconitic acid as propionic is to acrylic acid, was first obtained by Dessaignes in impure condition by the action of sodium amalgam on aconitic acid. Kekulé suggested that the acid of Simpson and the acid of Dessaignes were identical compounds. Wichelhaus proved this to be the case.

The real composition and the structure of tricarballic acid were, however, inferred from Simpson's experiments. Tricarballic acid is interesting in consequence of its relation to citric acid, the latter being the oxyacid of the former. A trivalent alcohol like glycerine can form three cyanides :—



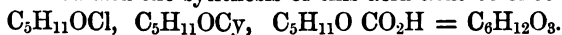
Each of these may be expected to produce with potassic hydrate solution a corresponding potassium salt. Simpson made the experiment with dichlorhydrin, and obtained potassic oxypropyrotartrate (β oxyglutaric acid ?) :—



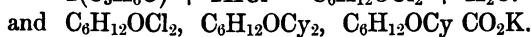
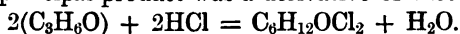
The compound $\text{CH}_3\text{C} \begin{array}{c} - \text{Cy} \\ - \text{OH} \\ - \text{H} \end{array}$, obtained from aldehyde and hydro-

cyanic acid gave Simpson and Gautier, under similar conditions, potassic lactate, thus confirming the synthesis of lactic acid from aldehyde and prussic acid by Strecker.

A mixture of alcohol, aldehyde and hydrochloric acid produce on standing monochlorether $\left. \begin{array}{c} \text{C}_2\text{H}_5 \\ \text{C}_2\text{H}_4\text{Cl} \end{array} \right\} \text{O}$. As aldehyde and acetone are considered to possess an analogous constitution, Simpson expected a similar reaction to occur in a mixture of alcohol, acetone and hydric chloride, with the formation of the compound $\text{C}_5\text{H}_{11}\text{ClO}$. If in this compound the chlorine is replaced by cyanogen, and then the new cyanide boiled with potassic hydrate, the potassium salt of leucic acid might be formed and the synthesis of this acid thus be effected :—



A series of elaborate experiments gave Simpson not the expected results. The principal product was a derivative of mesitylic oxide :—



Only one equivalent of cyanogen being converted by boiling potassic hydrate into the group CO_2H . The hydrogen salt $\text{C}_6\text{H}_{12}\text{OCy CO}_2\text{H}$,

called mesitylic acid, was obtained in well defined crystals, which have not been further examined by Simpson. ("P.," xvi, 364.)

In the year 1872 Maxwell Simpson was appointed Professor of Chemistry in the Queen's College, Cork. He now devoted himself enthusiastically to the performance of the duties of this appointment, and did his best by lectures and practical instruction to forward the scientific knowledge of his pupils. According to the testimony of the students, he was a most excellent teacher, second to none. The attention he paid to the duties of his Professorship, however, absorbed all his time and energies, so that he no longer was able to do original work. After the year 1872 his name occurs only once or twice in the scientific periodicals.

Commercial work Maxwell Simpson always refused. Liberal-minded, he always returned poor students the fees they had paid as members of his classes. It was only natural that a Professor like Maxwell Simpson should gain the respect and affection of his students.

After working 20 years at Cork he retired and took up his abode at West Kensington, London, where he spent the last ten years of his life in quiet retirement, which was only broken by two painful events. First, he lost his eldest daughter, who was most devoted to her father, and then, only two years ago, Mrs. Simpson, the faithful wife who had shared, for more than 50 years, all his pleasures and sorrows.

H. D.

RT. HON. SIR RICHARD TEMPLE, BART. 1826—1902.

Sir Richard Temple, who died March 15th, 1902, was born in 1826, at the Nash, Kempsey, near Worcester. This property had belonged to his family, who were a younger branch of the Temples of Stowe, for many generations, and was ultimately inherited by him. He was educated at Rugby and Haileybury, and entered the Indian Civil Service in 1846. After serving for some years in the North-West Provinces and the Punjab, where he became, in 1854, secretary to Sir John (afterwards Lord) Lawrence, he was appointed, in 1860, member of a Special Financial Commission, and visited the different provinces of India to investigate their resources and revenue. His subsequent career is well known, and his official promotion was rapid. He became in succession, Chief Commissioner of the Central Provinces, Resident at Hyderabad, Foreign Secretary to the Government of India (1868), Financial Member of the Governor-General's Council (1868), Lieutenant-Governor of Bengal (1874), and Governor of Bombay (1877). In 1880 he retired from Indian service, and became a candidate for

Parliament, at first unsuccessfully, but in 1885 he was elected member for Evesham in Worcestershire, and represented first that borough and afterwards the Kingston division of Surrey until 1895. He was also a member of the London School Board from 1884 to 1894, and vice-chairman from 1885 to 1888.

The preceding list of the posts filled by Sir R. Temple is very far from complete. Few men have played more parts upon the world's stage, and very few have been more successful as officials. He was a man of great abilities, combined with unusual capacity for work, he was an admirable worker, a fairly good speaker and an accomplished artist, but his predominating talent was his wonderful energy. Many tales are told in India of great power of getting through work, and of his tact in dealing with difficult questions.

Of Sir R. Temple's labours as official and statesman it is unnecessary to write here, but a few instances may be mentioned in which he was able to promote scientific work, or to effect economic improvements by adopting scientific methods. The establishment and protection of reserved forests in India received much support from him; he was first impressed with the importance of the subject when he was a member of the Financial Commission in 1860, and when Chief Commissioner of the Central Provinces in 1863, acting under the advice of the Inspector-General of Forests, Dr. (now Sir Dietrich) Brandis, he took steps, by adopting measures for the preservation of reserved forests from fires, and in other ways, which have resulted in the conversion of worthless scrub into valuable sources of timber supply. This beneficial work, carried out in spite of much opposition by both Europeans and natives, official and non-official, was afterwards continued by Sir R. Temple in Bengal and Bombay, and has become general throughout India. In Bengal also the reservation and protection of large tracts in the Sundarbans for forest supply was due to him. He also assisted in the establishing of cinchona plantations in Sikkim, and in the creation of a manufactory which now supplies quinine at a low price throughout Bengal, a great boon to a population decimated by malaria.

To the active aid of Sir R. Temple, when he was Lieut.-Governor of Bengal, is due the establishment of the flourishing Zoological Gardens of Calcutta. The Committee appointed by the Asiatic and Agri-Horticultural Societies had experienced the greatest difficulty in securing a good site, when the question was taken up and solved by the intervention of the Lieut.-Governor, who secured for zoological purposes the excellent garden now occupied at Alipore.

Sir R. Temple was the author of several works on India, he also published some autobiographical sketches, and an account of the House of Commons from his pen appeared in 1899. He was a Member of the

Asiatic Society of Bengal from 1860, and a Fellow of the Royal Geographical Society from 1865. After his retirement from India, in 1880, he was for some years a member of the Council of the last-named Society, and contributed several papers on Indian Geography to its Proceedings. But throughout his official career in India, and during his membership of Parliament, work of many kinds left him no time for scientific studies, and it was not till 1896, when he became a Privy Councillor, that he was elected a Fellow of the Royal Society. During the few years that remained of his life he was a frequent attendant at the Society's meetings. He was LL.D. of Cambridge and D.C.L. of Oxford, and his services to the State were recognised by his being made a Companion of the Star of India in 1866, K.C.S.I. in 1867, a Baronet in 1876, and G.C.S.I. in 1878.

W. T. B.

GEORGE FERGUSSON WILSON. 1822-1902.

George Fergusson Wilson was born at Wandsworth, of Scottish extraction. He died on the 28th of March, 1902, in the eightieth year of his age, at Weybridge Heath. He was a Fellow of the Linnean, the Chemical, and Royal Horticultural Societies, as well as of the Society of Arts, and was elected a Fellow of this Society in 1855.

The story of his life is instructive and encouraging. It is contained for the most part in a little autobiographical treatise, which he drew up for the instruction of his sons in 1876, under the title of "The Old Days of Price's Patent Candle Company."

It is not necessary in this place to do more than allude to the commercial features of this enterprise, nor to the philanthropic measures initiated in connection with it. Our concern lies with the development of chemical knowledge, and its successful application to a large manufacture.

The Company, of which Wilson was the Managing Director, for the first time not only brought good candle-light within the reach of a large class who could not previously afford it, but, in the collateral products of their manufacture, influenced two of the great staple manufactures of the country by the production of "cloth oil" and "spindle oil."

The Company were among the first to make practical use of superheated, low-pressure steam, as a consequence of which they were enabled to put pure glycerine on the market, and to manufacture pure palmitic acid, one result of which latter was the introduction of candles "that do not drop the grease."

George Wilson was taken from a solicitor's office, in 1840, to take part in the management of this Company. Knowing at first little or nothing about chemistry, but, having from the first a clear perception of the value of such knowledge, he speedily devised experiments which ultimately led to important results. Wilson himself, in a lecture to the Society of Arts, says:—"Science once introduced has raised candle-making from a simple, clumsy, offensive, mechanical trade into a first-class chemical manufacture, one offering the widest field for applications of the highest chemistry. The time must soon, if it has not already, come, when a well-organised laboratory, and a thorough acquaintance with the works of the high scientific chemists, and even communication with some of themselves, will be considered necessary elements of candle-making success." This was written so long ago as 1856, when its cogency would not be so fully realised as it is now.

On his retirement from the management of this great concern, Wilson gave himself up enthusiastically to gardening as a hobby, being one of the first to adopt orchard-house culture on a considerable scale, and afterwards devoting himself to the culture of lilies and hardy plants generally. His garden was not a garden in the ordinary sense; it was a wood, a lake, a prairie, a rocky valley, where the plants did not appear to grow because they had been placed there, but because there they found the conditions most favourable for their growth. The art of the gardener was concealed, but none the less it was art based on accurate observation and continuous experiment, qualities gained in the laboratory, as he himself stated.

M. T. M.

PROFESSOR ALFRED MARIE CORNU. 1841—1902.

Professor Alfred Marie Cornu, who died on the 12th April, 1902, was born in 1841 at Châteauneuf, and entered the École Polytechnique at the age of 19 years. Leaving it in 1864, he passed to the École des Mines, the diploma of which he received in 1866. But he did not remain long in the profession of engineering, being appointed in 1871 Professor of Physics in the École Polytechnique, an office which he held down to the day of his death. His brilliant career as a student was followed by one more brilliant as a teacher and investigator. Of his many contributions to original knowledge only a very brief outline can be given. His position at the École Polytechnique gave him, amidst the material surroundings of his laboratory, the leisure from routine so necessary for research and for the never-ending improvement

of his courses of lectures to maintain them abreast of the advances of science. The beauty, the dignified ease and perfection, of his investigations, the perspicacity of his observations, the masterly reserve, so to speak, of the scientific memoirs which from time to time he published, all bespeak a man of no ordinary capabilities—a master in his profession. Clear in his exposition of scientific matters, exquisitely clear alike in his experimental demonstrations and in the language in which he expounded their theory, he was as great in teaching as in research. His first publication was the thesis written for his doctorate upon the reflexion of light in crystalline media, in which he sought to perfect the theory of Fresnel by modifying the conditions at the limiting surface between the two media. This research exercised a notable influence upon his scientific life. Optics was his first love, and though he laboured successfully in other branches of experimental physics, it was to optics that he returned, and in the field of optics were achieved his greatest successes in physical investigation. The pages of the *Comptes Rendus* and of the *Journal de Physique* bear eloquent testimony to the activity and penetration of his mind. Already, from 1863 to 1865, while at the École des Mines, he had begun to contribute, to the Académie des Sciences, notes on the refraction and reflexion of light. Following up the work of Jamin, he later pursued the subjects of vitreous and metallic reflexion, and studied the connexion between them. He showed that they were but parts of one and the same phenomenon, though affecting different regions of the spectrum, there being, as he demonstrated, a true continuity between them.

Soon after entering upon the duties of his chair, Cornu began, with laborious and patient preparation, those experiments upon the velocity of propagation of light which have become classical. Fizeau on the one hand, Foucault on the other, had already made determinations, each on his own lines. Foucault's value, then supposed to be the best, was 2.98×10^{10} in C.G.S. units. Cornu's results raised this figure to 3.004×10^{10} in vacuo, or 3.0033×10^{10} in air. His method, which was fundamentally the same as that of Fizeau, was applied to the transit of light over a total distance of 46 kilometres, or between two stations 23 kilometres apart, the one at the Observatoire in Paris, the other at Montlherý. The instrumental perfection of his rotatory apparatus enabled him to observe up to the twenty-first extinction of the beam, thus securing a precision far in advance of that attained by Fizeau. For his determination of the velocity of light he was awarded the *prix Lacaze* in 1878, the same year in which his merits were recognised by his admission into the Académie des Sciences. He cherished the intention in later years of making a still more perfect

determination by sending the light between Corsica and Mont Mounier, which is an annexe of the Observatory of Nice. In 1872 he wrote papers "On Electrostatic Measurement," dealing with the potential theories of Gauss and Green, then little known in France. They are to be found in Vol. I. of the *Journal de Physique*, then recently founded by his friend d'Almeida.

For several years subsequently, and at different times, Cornu was occupied with researches on the spectrum. He measured the wavelengths of the hydrogen rays with a precision previously unknown, enabling a comparison to be made between the values so obtained by experiment and the theoretical formulæ which had been proposed by Balmer and others to express them. The suggestions of Dr. Johnstone Stoney, and the later developments of Kayser and Runge, will not be forgotten in this relation. His special and searching inquiry into the ultra-violet solar spectrum is also memorable. He made observations on atmospheric absorption in the spectrum, using photographic methods, at his country house at Courtenay, where he spent most of his vacations. He devised an elegant modification of the slit apparatus to enable simultaneous observations to be made of light from the two ends of a diameter of the sun's surface, the advancing and the retreating, and thus, by an application of Doppler's principle, was able effectually to pick out those lines which were of solar origin from those due to absorption in the stationary atmosphere of the earth. He was able to fix the inferior limit to the ultra-violet end of the spectrum, so far as it is visible at low elevations, and found that in the laboratory air is opaque to ultra-violet waves of a lesser wavelength than 0.185μ . His work on meteorological optics has thus been summarized by M. Guillaume: "Such researches, in the course of which he was often led to a scrutiny of the sky, could not fail to draw his attention to the optical phenomena of the atmosphere, the study of which, though energetically pursued by the French physicists of last century, is to-day somewhat neglected. The splendid glows which were observed in the sky toward the end of 1883 furnished to Cornu an occasion to utilize the profound knowledge which he possessed of the phenomena of optics. He showed that the twilight glow, which at that time gave such marvellous charm to the sunsets, was due to a diffraction caused by fine powders, and it became evident that the formidable volcanic explosion of Krakatoa was the prime cause of it."

To Cornu we owe some admirable studies upon the conditions for achromatism in the phenomena of interference; a solution of the problem of photometry of polarised light; and researches on the focal anomalies of diffraction gratings. Shortly after the announcement of the Zeeman phenomenon, Cornu discovered that the line D, under

magnetization in the normal direction, is decomposed into four components. He also published an elegant experimental method for the investigation of the optical constants of lens systems. He devised the optical lever for the measurement of the curvatures of lenses; and he perfected the Jellet prism for polarimetric work. To him is due the elegant geometrical construction in which spirals are applied to express graphically the relative intensities of the light in diffraction images. His preference for geometrical demonstrations of theorems, which might otherwise be hidden under a burden of analytical symbols, was well known. He worked acoustics in conjunction with M. Mercadier, and investigated the values of musical intervals in the case of melody and in the case of harmony, which it is known are not necessarily coincident. He examined experimentally the torsional vibrations which accompany the transverse vibrations of violin strings. In conjunction with M. Baille, he redetermined the constant of gravitation. He was occupied, too, with the problems of synchronization of two resonant systems capable of vibration under elastic forces, these memoirs being published in 1888 and 1889, the second of them including the application of his ideas to the synchronization of clocks for the distribution of time. His plan was closely akin to that of Wheatstone, depending on the sending, at every second, of feeble induction currents generated by the movement of a magnet attached to the pendulum of a master clock. In 1884 he reported on the electric transmission of power by M. Marcel Deprez on the Chemin de Fer du Nord. He took part in the first electrical congress at Paris in 1881. In 1886 he became a member of the Bureau des Longitudes, and of the International Bureau of Weights and Measures. For the former body, in which he took great interest, and did much to perfect the "*Annuaire*," to which he contributed some exceedingly valuable and authoritative essays on electric phenomena from the modern standpoint, on star spectra, on electric generators, and on polyphase currents. On the International Bureau of Weights and Measures he worked at the construction of the new standards, insisting, against considerable opposition at first, on the advantage of adopting a highly polished surface upon which to engrave the fiducial marks in the new metre standards. To his pen as reporter, after the death of M. Tresca, is due the report of the International Bureau, recording the transition from the old "*mètre des archives*" to the "*prototype provisoire*," which in turn led to the "*mètre prototype international*."

Cornu was twice President of the Société de Physique, of which, indeed, he was one of the foundation members. He took an active interest in its meetings, and contributed much to its success. He was also President of the Académie des Sciences; and by general consent

was elected to preside over the International Congress of Physics in 1900. He was elected a Foreign Member of the Royal Society in 1884, and had previously, in 1878, received the Rumford Medal for his work on the velocity of light. He was also an Honorary Member of the Physical Society of London. At least twice he gave Friday evening discourses at the Royal Institution; the last of these, in 1895, being "On the Physical Phenomena of the High Regions of the Atmosphere."

In 1899 he delivered, with delightful eloquence and learned ease, the Rede lecture at Cambridge, "On the Wave-Theory of Light and its Influence on Modern Physics." On this occasion, which was at the time of the jubilee celebration of Sir George Stokes, he received the honorary degree of Doctor of Science.

In Cornu, France has lost one of her most distinguished men of science, and one who, not only as investigator, but as teacher and wise counsellor, had won universal esteem and respect. A true follower of the high traditions of France in the pursuit of science, and a passionate follower of Arago, Biot, Fresnel, and Fizeau, he was in his own person much more than this. He was the ideal of a well-equipped, well-balanced, intellectual leader in scientific thought; at the same time a man of action, and an artist in words.

S. P. T.

JOHN HALL GLADSTONE. 1827—1902.

John Hall Gladstone was born at 7, Chatham Place West, Hackney, on March 7, 1827. He was the eldest of three brothers, and at the time of his birth, his father, John Gladstone, was junior partner in the firm of Cook and Gladstone, wholesale drapers and warehousemen in Cheapside, and afterwards in St. Paul's Churchyard.

The Gladstone family belonged to Kelso, in Roxburgshire, where, as the parish registers show, they had been established since 1645. John Hall Gladstone's immediate ancestors were damask weavers, his grandfather being what was known as a master-weaver. His father came to London in 1815, and, in the early part of the following year, became a shopboy in Mr. Cook's establishment, but soon rose to be traveller and buyer, and in 1824 was taken into partnership, when he married his cousin, Alison Hall, whose father had a drapery establishment in Bishopsgate Street. He prospered in his business, and eventually removed to Stockwell Lodge, a house now forming part of the South London Fever Hospital. John Hall Gladstone with his brothers, was educated entirely at home under tutors. His

father, having amassed a considerable fortune, retired from business in 1842, and spent some time on the Continent with his family and in the society of his friends, Mr. and Mrs. Tilt, whose daughter May, six years later, became John Hall Gladstone's wife.

Even in early boyhood John Hall Gladstone showed a strong bias towards natural science, and in 1844 he elected to take up science as a calling, and went to University College to attend the chemical lectures of Graham, and to work in his private laboratory. Whilst here he gained a Gold Medal for original research, and published his first contribution to scientific literature in the form of a paper on Guncotton and Xyloidine. In 1847 he went to Giessen University to work under Liebig; here he took his degree as Doctor of Philosophy, and returned to London in the following year. In 1850 he was appointed Lecturer in Chemistry at St. Thomas's Hospital, and in 1853, at the age of 26, he was elected into the Royal Society. Six years later he was made a Member of the Royal Commission on Lighthouses, Buoys, and Beacons, and from 1864 to 1868 he served as a Member of the Guncotton Committee, appointed by the War Office. He held the Fullerian Professorship of Chemistry at the Royal Institution from 1874 to 1877, and was President of the Physical Society, of which he was one of the original founders, in the year of its formation in 1874, and was President of the Chemical Society, of which he had been a Member since 1848, in 1877-79. He was one of the six past Presidents of the last-named Society who could boast of a membership of over fifty years, and in whose honour a banquet was given in 1898.

As a man of science, Dr. Gladstone will be mainly remembered for his share in the early development of Physical Chemistry, and especially of that portion of it which is concerned with the relations of Chemistry to Optics. He was one of the earliest workers in Spectroscopy and on the application of the prism to chemical analysis, and he was the first to detect the remarkable optical behaviour of didymium and its solutions. He published a series of papers on the solar spectrum, one of them in conjunction with Sir David Brewster, and on the spectra of gases. He worked also on fluorescence and phosphorescence, on chromatic phenomena, and on circular polarisation; on the influence of temperature on the refraction of light, and on the refraction equivalents of the elements. Some of his papers on these subjects were published in association with the Rev. J. P. Dale. He was among the earliest to trace the connection between the chemical constitution of a substance and its refractive and dispersive powers.

Questions of chemical dynamics and on the causes and conditions of chemical change occupied him at various times throughout the

whole period of his life as an investigator, and he published a number of papers on the reciprocal decomposition of salts and on the conditions governing their stability.

In the early part of his career he did a considerable amount of work in pure chemistry, particularly in inorganic chemistry, and especially on the haloid compounds of phosphorus and their ammoniacal derivatives, on nitrogen chlorophosphide, on the so-called nitrogen iodides, and on pyrophosphoric acid and its amides, mostly alone, but partly in conjunction with Mr. J. D. Holmes. After Mr. Holmes' death, he worked in collaboration with Mr. Alfred Tribe. The discovery of the copper-zinc couple in 1872, and the study of its action on organic substances, constitute, perhaps, the most important result of this co-operation. For these researches he was awarded, in 1897, the Davy Medal.

Dr. Gladstone was well acquainted with Faraday. Indeed, there was much in common between the two men, and their intimacy developed into a firm and lasting friendship. After Faraday's death, Dr. Gladstone put together his reminiscences of his friend in the form of a biographical notice, "*The Biography of Michael Faraday*, London, 1872," which was one of the most popular and most widely read accounts of the career of that illustrious philosopher.

Although ardently attached to science, and keenly interested in its progress, much of Dr. Gladstone's intellectual energy was spent in other pursuits. Throughout the whole of his life he was engaged in philanthropic, educational, and religious movements. Very early in his career he became connected with the British and Foreign School Society, and soon after the formation of the Young Men's Christian Association he joined the parent Society, and served on the Committee for some years, and when the first World's Conference met in Paris in 1855, he was one of the representatives of the London Associations, and also at the first British Conference, held at Leeds in 1858. He was a Vice-President of the National Council from the time of its formation, and took a great interest in its work at home and abroad.

Members of the British Association for the Advancement of Science will remember that Dr. Gladstone, who was a constant attendant at its gatherings, annually convened a religious meeting, as a practical expression of his views concerning the relation of science to religion. As a Member of the Christian Evidence Society, in whose work he continued to take the liveliest interest to the very day of his death, he published two lectures, one on "*Points of Supposed Collision between the Scriptures and Natural Science*," and the second, on "*Miracles as Credentials of a Revelation*."

Dr. Gladstone, who was an ardent Liberal in politics, was frequently solicited to enter Parliament, and in 1868 he unsuccessfully contested the borough of York. If returned, he had intended to throw himself in the educational struggle which was to culminate in the passage of Mr. Foster's measure in 1870. Indeed, he will long be remembered for his services to the cause of education.

From 1873 to 1894 he was a Member of the School Board for London for the Chelsea District; for three years he was Vice-Chairman of the Board, and for many years he was Chairman of the Books and Apparatus Sub-Committee. As a practical educationist his consistent aim was "to improve the methods of instruction, and to arrange for due provision in the schools for carrying out the more important branches of education—those that would best fit the children for the needs of later life, and give them the best attainable knowledge of the world and of the forces around them." To this end he set himself to investigate the school systems in various Continental countries, and in Canada, the United States, and in Algeria.

Dr. Gladstone was an expert phonographer, and his intimate acquaintance with the art was no doubt the reason why he so persistently advocated the necessity for a reform in English spelling. In 1876 he succeeded in inducing the London School Board to pass, by a large majority, a resolution affirming that a great difficulty was placed in the way of education by the present method of spelling, and suggesting that a Royal Commission should be appointed to consider the best means of reforming and simplifying it. The topic was extensively discussed, and a considerable number of the provincial School Boards were induced, in spite of the opposition of the late Mr. Firth (then Chairman of the London School Board), to join in a memorial to the Committee of Council on Education in favour of the reform. Dr. Gladstone helped the movement by the publication of a small work on "Spelling Reform from an Educational Point of View," which went through several editions, and he induced the now defunct Social Science Association to take up the subject. The outcome of this was the foundation, in 1879, of the Spelling Reform Association, which continued to press upon the Education Department the need for inquiry. The attitude of Sir Francis Sandford was consistently unfavourable, and but little is heard to-day of the question of phonetic spelling. Dr. Gladstone was, however, successful in helping to abolish the use of the ordinary spelling-books, and in making shorthand a subject of tuition in the day and evening schools of the Board.

He was further instrumental in forwarding the movement for manual instruction in Board Schools, and in securing greater attention

to technical training. He had a firm belief in the value of object-lessons, and in 1883 published a lecture on "Object Teaching."

During the religious controversy, which was in full swing at the Board in 1894, in which year he did not seek re-election, he spoke strongly against the action of those who attacked the system of religious instruction adopted in the schools of the Board, as the result of the Cowper-Temple Clause of the Act of 1870.

At the time of his death he was an Almoner of Christ's Hospital, and took great interest in the re-arrangement of the School consequent upon its removal to Horsham.

In recognition of his services to education, he was made an Honorary Fellow of the College of Preceptors. He was made an Honorary D.Sc. at the Tercentenary of Trinity College, Dublin, in 1892.

On Monday, October 6, 1902, he had attended a Meeting of the Christian Evidence Society, and returned to his residence in Pembroke Square, in his usual health, at about 6 p.m. At 7.30 his body was found, lifeless, in his study. He had been stricken with heart-failure. He was buried, on the following Friday, in Kensal Green Cemetery.

He was twice married. His first wife died in 1864, in which year he lost also his eldest daughter and only son. His second wife, Margaret, to whom he was married in 1869, was the daughter of the late Rev. Dr. King and a niece of Lord Kelvin's.

A man of singular modesty; quiet, gentle, and unobtrusive; urbane, courteous, and conciliatory in manner; earnest in well-doing; helpful and considerate to others, and of transparent integrity; his kindly genial presence will long be missed in those gatherings of men of science in which he found, during upwards of half a century, the great pleasure of his life.

T. E. T.

SIR WILLIAM CHANDLER ROBERTS-AUSTEN, K.C.B.

1843—1902.

Sir William Chandler Roberts-Austen, K.C.B., who died on November 22nd, 1902, was born in 1843. His father, George Roberts, was of Welsh descent, whilst his mother, Maria Louisa, belonged to the Kentish family of Chandler, which intermarried with the Austens. In 1885, at the request of his uncle, the late Major Austen, J.P., of Haffenden and Camborne, in Kent, he obtained Royal licence to take the name of Austen.

At the age of 18 he entered the Royal School of Mines, with the intention of becoming a mining engineer, but after obtaining the

Associateship of the School he was engaged by Graham, then Master of the Mint, in the capacity of a private assistant. On Graham's death, in 1869, the Department was reorganised in accordance with the provisions of the Coinage Act of the following year, and in conformity with the recommendations of the Royal Commission which had been appointed to inquire into the administration of the Mint as far back as 1848. Under that Act the Chancellor of the Exchequer for the time being became Master, Worker, and Warden of the Royal Mint. No salary was attached to the office, but it was provided that all its duties should be performed and exercised by his "sufficient deputy." In order to provide for the efficient discharge of the scientific work devolving on the Mint, a new post—that of "Chemist of the Mint"—was created, and Roberts was selected to fill it, being appointed by Treasury Minute of January 7th, 1870. At this time the assays on gold and silver bullion received for coinage were performed within the Department, whereas the assays of coinage bars and finished coin were entrusted to certain eminent chemists, known as "non-resident assayers." The death of Dr. W. Allen Miller, one of the non-resident assayers of the Mint, towards the end of 1870, afforded an opportunity for reconsidering the general system on which the assay work of the Department was conducted, with the result that the practice of employing non-resident assayers was discontinued. This led to the appointment of Roberts as a second assayer in the Mint, whilst retaining his post as chemist. This arrangement was maintained until 1882, when the assay work was concentrated in one office, and Roberts was appointed to the amalgamated post of "Chemist and Assayer," the separate post of chemist being abolished. This office he held up to the time of his death, practically no change having been made in the organisation of the Assay Department for the last twenty years.

It is impossible to enumerate here the many technical points connected with the metallic currency to which Sir William Roberts-Austen's attention was directed during the thirty-three years which have elapsed since he became officially connected with the Mint. These are described in more or less detail in the memoranda he was called upon to supply each year for publication in the Annual Reports of the Deputy Master and Comptroller of the Royal Mint, which have been regularly presented to Parliament since 1870.

Some of the more important of these questions, with the years in which they came up for special consideration, are enumerated below:—

Chemical and metallurgical operations in European

Mints	1870
Treatment of brittle gold	1870-1

Assay by means of the spectroscope, in conjunction with Sir Norman Lockyer	...	...	1872-4
Ancient trial plates of gold and silver	...	...	1873
Liquation in alloys...	...	...	1874
Density of gold copper alloys	...	...	1877-8
The induction balance, in conjunction with its inventor, Prof. Hughes	...	...	1880
Steel for the manufacture of dies	...	...	1881, 1897
Hardening of steel	...	...	1882
Density of metals in fluid state	...	...	1881-2
Method of reporting gold assays	...	...	1882
Rate of wear of coins, in conjunction with Mr. R. A. Hill	...	...	1883-4
Art of casting metals	...	...	1885
Report on Mints and Assay Offices of the United States, in conjunction with the Deputy Master	...	...	1885
Electro-deposition of iron	...	...	1886, 1901
Cost of production of silver	...	...	1888
Eutectic alloys	...	...	1890
Wear of gold coins...	...	...	1891
Diffusion of metals...	...	...	1895
Treatment of the surface of silver and bronze medals	...	...	1897
Standard trial plates	...	...	1899
Bronze alloys for medals	...	...	1900

On the death of Sir Horace Seymour, the late Deputy Master of the Mint, in June last, Sir William Roberts-Austen was appointed to fill the office *ad interim*, or until his own official connection with the Mint should be severed by resignation. This he had intended should take effect in the spring of the coming year. It may be said, therefore, that Sir William Roberts-Austen has, at one time or other, filled every office in the Mint which a man of his order could aspire to. And no more convincing testimony to the manner in which he discharged his official duties, and no more eloquent proof of how he acquitted himself under the great responsibilities of his position, could be adduced than this single fact.

Roberts-Austen always cherished, as one of the most treasured memories of his life, the recollection of his early association with the Royal School of Mines, and there was probably no one position he coveted more than its chair of metallurgy, and no incident in his career which gave him more pleasure than his appointment, in 1880, to that chair, in succession to the late Dr. Percy. It was the wish of his heart, had he been spared, that, after his retirement from the

Mint, he might spend his remaining years—or so many of them as the regulations of the Department would have allowed him to spend—in the service of the School. It was possible that he cherished the hope that the erection of the new buildings on the other side of Exhibition Road might have afforded him the opportunity he had long desired—that of creating and equipping a metallurgical laboratory which should be worthy of this country and of an Empire whose sons are engaged in metallurgical work in almost every part of the globe. But if this was not to be, he has at least erected a monument to himself in the record of his past achievement; in the thoroughness and fulness of his teaching; in the scientific enthusiasm with which he sought to lay bare and illumine the problems of physical metallurgy. During the two-and-twenty years he held his chair, he trained a succession of men holding important positions at home and in many parts of the world, who are grateful to him for the stimulating influence of his teaching, who will recall many acts of personal kindness and goodwill, and who, now that his place in the subterranean lecture-room he loved so well, and in which, with all the quickening zeal of a born teacher, he had spent some of the happiest hours of his life, knows him no more, will mourn his loss as that of a dear friend, and will continue to cherish his memory and recall the many kindly traits of head and heart which characterised him.

In the outset of his career as an investigator, Roberts-Austen occupied himself with a number of minor problems in inorganic chemistry, and there is little continuity of thought or effort to be traced in much of his 'prentice work. But there is invariably the note of originality. All his life through he was strongly attracted by what is odd, uncommon, or *bizarre*. Perhaps it was the influence of the Celtic blood which ran in his veins which predisposed him to the mysticism which was undoubtedly a feature of his character. Had he lived three hundred years ago, he would have been a typical alchemist, and have spent all the skill and energy he showed in assaying and minting gold in vain attempts to make it. Science, however, would certainly have been the richer for his efforts, for he was a very acute observer, and although occasionally his preconceptions were liable to run away with him for a time, especially in the direction of scientific heterodoxy, he was staunchly loyal to his facts. Much of his work was influenced by his strong artistic sense and by his passionate regard for beauty of form or colour. The secrets of Oriental metallurgy had a singular fascination for him. He would literally gloat over some triumph of Japanese art, and the discovery of by what kind of "pickle," or by what kind of treatment, the lustre or colour or effect on a bronze had been obtained was a

delight to him as intense as if he had lighted upon a new metal. The artistic side of his nature found frequent exercise in his work at the Mint, especially in medal-striking. He occasionally chafed under the necessity of having to make use of designs for which he had no sympathy, but he had a real delight in reproducing, with the highest degree of excellence that the resources at his command permitted, artistic work which his trained judgment and fine critical insight perceived to be sound and true. Indeed, this sense of "finish" and feeling for artistic excellence, amounting almost to fastidiousness, was seen, not only in his actual manipulative work and in the way in which he arranged and perfected his experimental illustration, but in the manner and form in which he put together and presented any account of his labours. His lectures at the Royal Institution were invariably illustrations of this. Perhaps no man since Tyndall's day ever handled a Friday evening discourse with more tact and skill than did Roberts-Austen. His matter was always fresh, his experiments always interesting, frequently daring, and occasionally strikingly original. He never tried to be rhetorical or pretended to be eloquent, but there was a certain literary finish in his sayings, a feeling for epigram, a sense of proportion in arrangement, and at times a quiet, subdued touch of humour which altogether made him delightful to listen to.

The Royal Society's Catalogue of Scientific Papers records that Roberts-Austen published some two dozen papers, for the most part singly, but occasionally in collaboration with Sir Norman Lockyer, Prof. Osmond and the late Dr. Alder Wright.

These papers made their appearance in the *Philosophical Transactions*, in the *Proceedings* of the Royal Society, in the *Journal* of the Chemical Society, in the *Philosophical Magazine* and in the Reports of the British Association for the Advancement of Science. They practically all relate to metallurgical problems, or are connected with the scientific side of his duties as an officer of the Mint. They deal with the spectroscopic characters of alloys, the physical and chemical nature of alloys, the structure of metals and the connection between the properties of metals and the periodic law, and the nature of the hydrogen occluded by palladium and by electro-deposited iron.

In 1890, at the request of the Alloys Research Committee of the Institution of Mechanical Engineers, he began to investigate the effects of small admixture of certain elements on the mechanical and physical properties of the common metals and their alloys. Whilst engaged on that work he devised the recording pyrometer, an instrument which has proved to be of the greatest value, not only to the investigator of pure science, but also to the practical metallurgist in recording the

temperature of annealing and other furnaces, and that of the blast in blast-furnaces. The results of these investigations are embodied in reports to the Institution of Mechanical Engineers, which afford a mass of valuable information concerning the structure of metals and their alloys, and their behaviour under varying physical conditions.

It was in the domain of physical metallurgy that he specially excelled, and by his unwearied energy, by his skill and resourcefulness as an experimentalist, he has succeeded in clearing up much that was vague and imperfectly understood in that field of inquiry.

He is the author of an "Introduction to the Study of Metallurgy," which has been characterised as a masterly guide to a knowledge of the principles on which the art is based.

This bald outline of Roberts-Austen's scientific work gives, however, a very inadequate idea of his diligence as a man of science or of the influence which he exerted on the progress of science. Such work as he engaged in was, from its very nature, time-consuming, and results were only obtained slowly and laboriously. From his official position, too, and by reason of his attainments, he was constantly called upon to serve upon committees, councils and commissions, into the work of which he never failed to throw himself with characteristic ardour and self-sacrifice. In 1885 he was a member of the executive council of the Inventions Exhibition. In 1889 he served on the British executive council of the Paris Exhibition, and in 1893 on that of the Chicago Exhibition. In the former year he received the Cross of Chevalier of the Legion of Honour.

He sat with the writer on the Treasury Committee which preceded the establishment of the National Physical Laboratory, and he was also a member of the Board of Trade Committee appointed to inquire into the deterioration of steel rails during use in railway traction.

Since 1899 he had been a member of the Explosives Committee appointed to investigate explosives for use in the Army and Navy and material for the construction of guns.

Concurrently with the services he rendered to the State, as a public servant, he did his fair share of labour in the organisation of scientific work as an executive officer of various scientific societies. He joined the Chemical Society in 1866, and served on its council in 1879-81, and became a vice-president in 1895-8.

In 1875 he was elected into the Royal Society, and served as a member of Council in 1890-2, and was a member and chairman of some of its committees. He was one of the founders of the Physical Society, of which he was also a vice-president, and was an active member of the Society of Arts, of which he was a member of council and

vice-president at the time of his death. He was also an honorary member of the Institution of Civil Engineers, of the Institution of Mechanical Engineers, and of the Institution of Mining and Metallurgy.

He was elected president of the Iron and Steel Institute in 1899, and held office until 1901.

In 1888 he was made a C.B., and received his knighthood in the order in 1899.

The University of Durham made him a D.C.L. in 1897, and a year or two later he received the honorary degree of D.Sc. from the Victoria University.

He was a constant attendant of the meetings of the British Association, and served as one of the general secretaries of the Council from 1897 to the year of his death.

His last public lecture was the James Forrest Lecture on "Metallurgy in Relation to Engineering," given to the Institution of Civil Engineers on April 23. In special lectures of this kind Roberts-Austen excelled. They cost him considerable effort, for he spared no trouble to make the occasion worthy of himself and of his subject, and he had his reward in the grateful appreciation of his auditory. A notable example of the quality of his work as a lecturer is seen in the Graham lecture on "Molecular Movement," which he gave to the Philosophical Society of Glasgow in 1879.

Indeed, no man discharged more faithfully, more honourably, or more religiously the obligations he had incurred, or which, by virtue of his position, were thrust upon him. It may be truthfully said of him that whatsoever his hand found to do he did it with all his might.

Some years ago Roberts-Austen acquired a small place at Chilworth, near Guildford, to which he would repair with Lady Roberts-Austen on all possible occasions. It never meant idleness to him, but there is no doubt that the occasional change from the atmosphere of Tower Hill to the breezy, invigorating air of a Surrey common had some effect in preserving him from the constant inroad he made upon his physical and mental energy. His social instincts made him a good neighbour, and he spent time and no inconsiderable amount of money in improving the lot of those around him. There was one side of his character of which only those who knew him well were made fully aware. It is reflected, however, in the beautifully decorated little chapel which he erected near his house for the benefit of the district, and in which he was wont to minister nearly every Sunday.

T. E. T.

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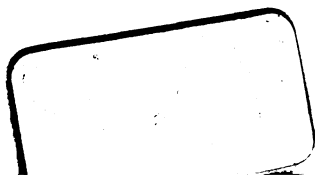
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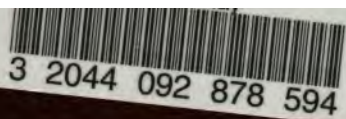
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